

CIO

How Gil

e1

Introducing

CIO Enterprise, a new resource to help CIOs, CEOs and other senior executives collaborate in achieving technology-enabled enterprise business value.

It's also a new way to share...

Just route this second section of **CIO Magazine** to other executive leaders whose partnership is vital to your enterprise success. Working together, CIOs and "the other Os" can create added value, profit and productivity.

FYI

FROM: _____

Attached is a copy of **CIO Enterprise**. The articles take a cross-functional look at leveraging information technology to add enterprise value. Thought you might be interested...

TO: _____

TO: _____

TO: _____

TO: _____

TO: _____

Share the Wealth

These days, technology leadership is a team sport. For an organization to get full value from its technology investments, all members of the executive staff must understand the game. With **CIO Enterprise**, **CIO Magazine** leverages 10 years of experience bridging the gap between business and technology to bring the most enlightening and relevant stories to executives of all functions. So pass it along. If you're reading **CIO Enterprise** for the first time and you like what you see, just fill out and mail the card following **Pages 22 and 54** and become a subscriber yourself.



Also Inside

**Leading
Innovators'
Success Secrets**

Page 50

**Could Commercial
Code Revisions
Threaten Your
Business?**

Page 66

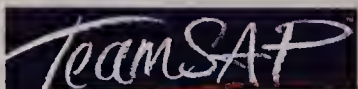
Guiding Lights

**How CEO/CIO
partnerships
can take your
business to
new heights**

Page 34

CIO Dean Sivley (left)
and CEO Hal Rosenbluth, of
Rosenbluth International Inc.,
constitute a successful
strategic team.

SAP, R/3, TeamSAP, AcceleratedSAP, and the SAP and AcceleratedSAP logos are the registered or unregistered trademarks of SAP AG. A Better Return On Information is a service mark of SAP AG. ©1997 SAP America, Inc. All rights reserved.



TeamSAP is a new initiative representing SAP's commitment to our customers' success through programs such as AcceleratedSAP.

AcceleratedSAP. Five quick steps to a better ROI. Get the most powerful business

software in the world the fastest way possible with AcceleratedSAP.™ It's a new program that allows

you and your TeamSAP™ consultants to follow a proven five-step



path to R/3™ implementation. From Project Preparation through Go Live, tools and

templates minimize delays and unplanned costs. Even after you're up

and running, we're there to support you every step of the way.

Already, companies using AcceleratedSAP have gone live

in less than six months. So with the returns in on

AcceleratedSAP, now it's time for you to get

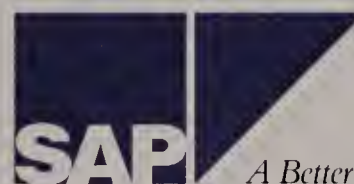
your better return on information. For

more information, visit us at

<http://www.sap.com> or

call 1-800-283-

1 S A P .



A Better Return On Information.™



enterprise

VOL. 11 • NO. 2 OCTOBER 15, 1997 • 154 PAGES IN 2 SECTIONS
SECTION 2

Features

- 34 The Power of Cooperative Thinking**
COVER STORY: ROUNDTABLE ON I.T. LEADERSHIP
Effective leadership is no longer a solo activity. Teams can dramatically improve performance at all levels—even at the top. *By Abbie Lundberg*

- 42 The PC Price Tag**
MEASURING I.T. COSTS The bad news is desktop costs keep rising. The good news is a spending model called TCO can help control them. *By Carol Hildebrand*

- 50 The Elusive Muse**
FOCUS ON THE WORKPLACE Ways to build an innovative environment and lure creative people into joining it. *By Jennifer Bresnahan*

- 60 Smooth Operators**
THE GLOBAL ENTERPRISE Gillette is regrooming processes and systems to present one cleanshaven face to its global retail customers. *By Derek Slater*

- 66 Rewriting the Code**
POLITICAL SCENE Proposed revisions to state laws could make your life more difficult. *By Jennifer Bresnahan*



ON THE COVER: CIO Dean Sivley (left) plays an integral role in accomplishing Rosenbluth International's strategic goals, says CEO Hal Rosenbluth.
Cover photo by Katherine Lambert



Routers. Hubs. Servers.

It's easy to get wrapped up in the **boxes** of networking.
But overlook the big picture, and you're forever confined.

At **ALLTEL Enterprise Network Services**,
we sell ideas first then we provide the technical expertise to
bring them to light. As a partner who thinks outside the box, we can
help you improve productivity, create effective customer relationships and
successfully enter new markets. In other words, we can help you
outdistance your competition.

Expand your mind.

Expand your margins.

Call us today.

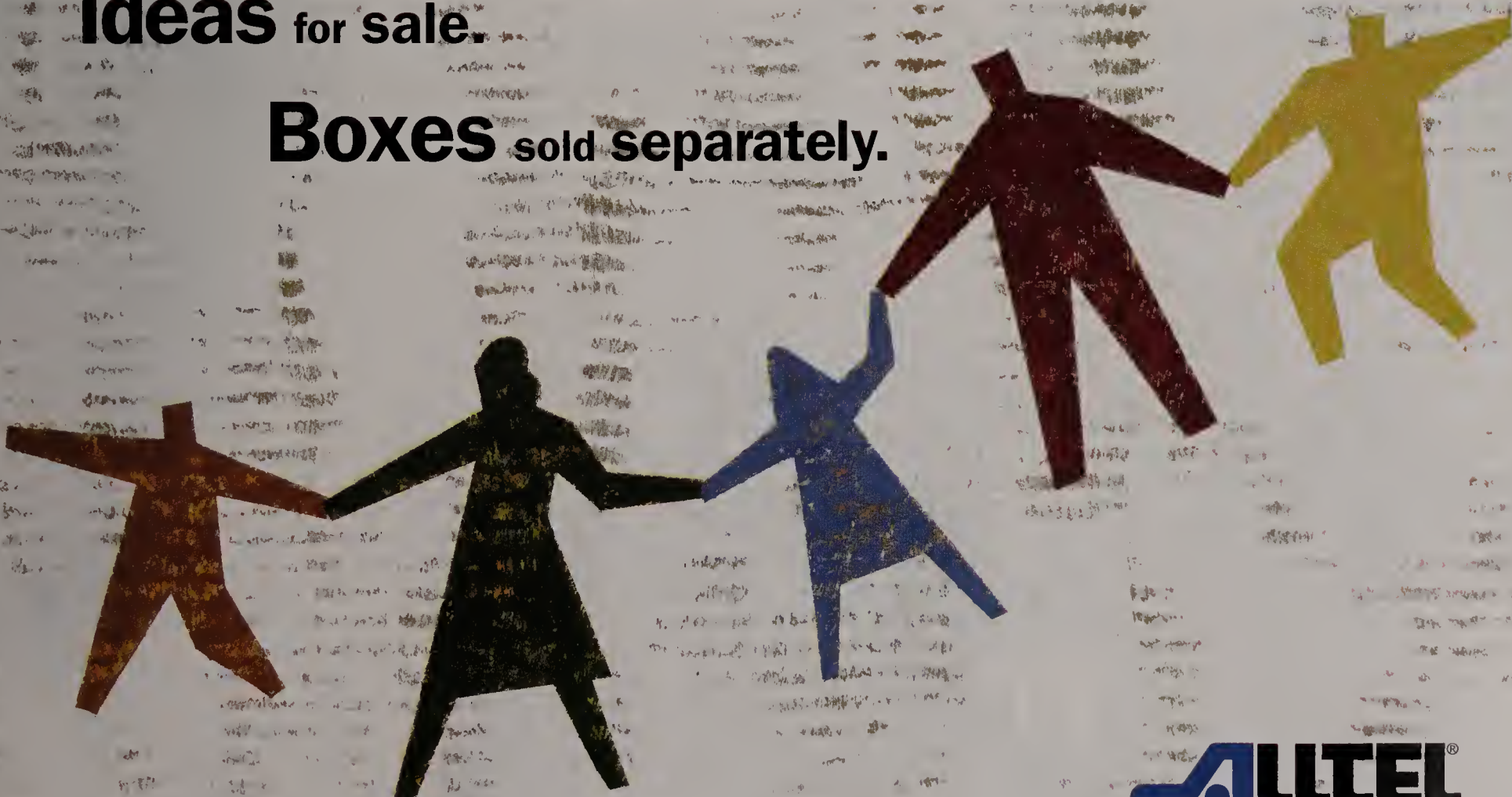
1-888-559-4ENS

972-866-1400

www.alltel.com

Ideas for sale.

Boxes sold separately.



ALLTEL®

Columns

22 The Hype and the Mighty

REALITY BYTES A charter to cut through the techno-buzz to find what's real. *By Lew McCreary*

28 Wise Investments

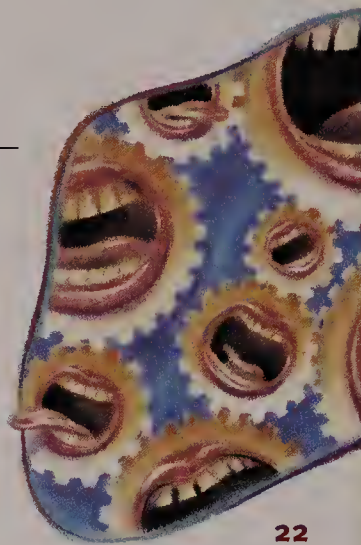
INTELLECTUAL CAPITALISM What you don't know *can* hurt your ability to gain—or maintain—competitive advantage. But tailor your investments in knowledge management to the kinds of knowledge your company needs. *By Richard W. Swanborg Jr. and Paul S. Myers*

70 Invisible Technology

HANDSHAKE There's plenty of flashy call center technology to be had. The key is applying it to serve your customers better. *By Cheryl Dahle*

78 What Is Bandwidth?

LEARNING CURVE The skinny on bandwidth. *By Derek Slater*



22

In Every Issue

6 Re: Total Cost of Ownership

10 In My Opinion

On Our Web Site • How To Reach Us

12 Plugged In

Vested Interest • A Ta\$k-Oriented Approach • Solution in Store • Samurai Shamurai • One Hand Better Wash the Other



14



Inside Section 1

PROJECT MANAGEMENT Many CIOs are overlooking a time bandit with nearly as much destructive potential as the millennium change: the gradual obsolescence of the IT department.

BEST PRACTICES In the quest for life after outsourcing, CIOs are turning project management teams into entire departments—and they're much too valuable to be traded.

COMPANY PROFILE Complex "enterprise software" packages like SAP R/3 are redefining the challenges for today's project managers. But for Visio, the goal was clear: Deliver a solid computer system, not the moon.

PROJECT PITFALLS IS projects are fraught with risk, but if you learn the warning signs, your project's failure might not be fatal.

EMERGING TECHNOLOGY Tracking the people and tasks for a big project requires managing skills and a variety of tools.

SHOP TALK

BankBoston's David Iacino discusses year 2000 project management.



"The biggest breakthrough in Open Systems since 1983"

NUMA-Q 2000

Sequent is the company who pioneered the world's first Symmetric Multiprocessing (SMP) systems, whose proven technology is at work in more than 8,500 installations around the world and who is ranked number 1 in customer service and support by a leading industry survey.

Now we've pioneered Sequent NUMA-Q™ 2000 – a powerful breakthrough computer system that rewrites the metrics for Data Center Ready computing. NUMA-Q 2000 is the mainframe alternative of choice, offering unmatched scalability, high availability and manageability, with the flexibility to buy what you need and add whatever else you need later. You'll never again have to replace hardware or rewrite applications to accommodate growth. And, our solutions are guaranteed to perform, enabling rapid implementation of complex business

applications that support your most critical business needs and extend the useful life of your systems well into the 21st century.

Now you can meet the most challenging demands of on-line transaction processing, decision support and business communication applications. Now you can breakthrough the limits of current technologies without having to give up compatibility. Everything your organization requires in power, scalability, flexibility, availability, manageability and more. With NUMA-Q 2000, information technology is a powerful weapon, not a threat.

For further information contact:

Corporate Headquarters:

Sequent Computer Systems, Inc.
15450 SW Koll Parkway
Beaverton, Oregon 97006-6063

(503) 626-5700 or (800) 257-9044

URL: <http://www.sequent.com>

SEQUENT

Our Business is Your Success

Re: Total Cost of Ownership

Generate positive momentum rather than market stagnation.

GIVEN THE STATE OF MY finances, I admit to a sympathy for companies that need analytical tools like total cost of ownership (TCO) models, which identify and cut costs associated with PCs (see "The PC Price Tag," Page 42). Anyone who balances a checkbook by perching it on the tip of one finger can understand how a large corporation can lose track of its PC expenditures.

For my accountant sister, digits tell a story, and if some of the numbers are missing, then so is part of the plot. Not knowing what you own and what you pay for maintenance is wasting opportunities to manage costs more efficiently. (Thus, she has a sleek new car, and I drive a battered vehicle of doubtful lineage.)

One could expect similar results from a corporation that goes through a TCO exercise. Centralized purchasing, electronic distribution of software and the setting of corporate technology standards should allow the thrifty company to sock away some extra cash (or avoid spending it in the first place). But even when presented with such tangible benefits, I still wonder if the concept of TCO isn't a tad shy of the bull's eye. The basic purpose of a business is to make money, not to save it, and TCO is all about shaving costs. "The most successful companies out there are revenue-focused, not cost-focused," notes Rick Smith, a New York-based partner with Giga Information Group Inc. in Cambridge, Mass. "Those that are cost-focused are trying to catch up."

You can't shrink a company to greatness, says consultant Dwight L. Gertz, who co-wrote *Grow to be Great: Breaking the Downsizing Cycle* (The Free Press, 1995).

Revenue-focused companies busily look outside the corporate walls, talk to their customers, track pertinent trends and breakthroughs, and plan for the future rather than react to the present. In such an environment, how much energy does one allocate to a navel-gazing activity such as analyzing TCO? Should the information systems (IS) group build a new system that adds several million dollars to revenues or put in place management procedures that save a couple million through head-count reduction, bean counting and general fiscal clutchfistedness? It's up to each company, but I vote for the former: Generate positive momentum rather than market stagnation.



Carol Hildebrand, Senior Editor
cjh@cio.com



© CIO Communications, Inc.

President and Group Publisher Joseph L. Levy
Editorial Director Lew McCreary

EDITORIAL

Editor in Chief Abbie Lundberg
Executive Editor Richard Pastore
Managing Editor Anne Stuart
Senior Editors Howard Baldwin (West Coast),
Alice Dagoon, Carol Hildebrand,
Art Jahnke, Christopher Koch
Associate Editors Elaine M. Cummings,
Cheryl Dahle, Todd Datz, Perry Glasser,
Megan Santosus (Web & Print), Sara Shay
Copy Chief Cheryl R. Asselin
Copy Editors Meg Mitchell, Sheila Neylon,
Thomas G. Wailgum
Senior Writers Mindy Blodgett,
Jennifer Bresnahan (Web & Print), Tom Field,
Sari Kalin, David Pearson, Derek Slater
Staff Writers Peter Fabris,
Alex Frankel (West Coast)
Editorial Researcher Carol Zarrow
Editorial Assistant Ruth Greenberg
Editorial Operations Manager Lisa Jayne Kerber
Contributing Editors Katherine Auer, Jill Zolot
Contributing Writers Curtis F. Franklin,
Bronwyn Fryer, Fred Hapgood, Paul S. Myers,
Richard W. Swanborg Jr.

DESIGN

Group Director, Art and Design Mary Lester
Art Director Lisa Puccio
Associate Art Director Michael Siggins
Sr. Graphic Designers Hana Barker, Linda Golon
Graphic Designers Terri Haas, Terri Mitchell,
Steve Traynor
Associate Graphic Designer Robin M. Belliveau

WEB SITE

VP / Technology and Webmaster Tim Horgan
Web Editor Stephen L. Singer
Web Developers Dagmar Eiben, Lee Weiner
Web Intern Kathleen Kotwica

CIRCULATION

VP / Circulation Carol A. Spach
Fulfillment Manager Susan Woodworth
Subscription Svcs. Manager Denise Perreault
Circulation Assistant Tina Pescara

PRODUCTION

VP / Production Lori Beth Sadewitz
Senior Production Manager Resa Altsher
Ad Traffic Coordinator Lynne Zouranjian

EXECUTIVE PROGRAMS

Senior VP / Exec. Programs Lynda Rosenthal
Director, Program Planning Susan T. Montgomery
Manager, Program Development Robin L. Azar
Manager, Program Operations Cynthia Laird
Mgr., Program Mktg. Comm. Sara A. Evangelous
Technical Admin. Specialist Liz Hecht
Program Mktg. Coordinator Jeremy E. Draper
Administrator, Exec. Programs Michael McPhee
Administrative Assistant Sandra J. Hughey
Program Traffic Admin. Brian Fuce
Data Coordinator Heather Beauton
Manager, Ancillary Products Bill Kerber

MARKETING

VP / Marketing Cathy O'Leary Hayes
Director, Marketing Programs Lisa Brown
Director, Public Relations Susan Watson
Research Manager Bridget Cammarata
Marketing Comm. Manager Marcy L. Dill
Trade Show Coordinator Dot Caspersen
Research Specialist Caroline Cerullo
Publicist Karen Fogerty

ADMINISTRATION

VP / Finance & Admin. Walter Manninen
Assistant to the Publisher Diane Martin
Office Specialist Cara Kelley
Billing Supervisor Lynn J. Palmquist
Financial Analyst Chad Marston
Accounting Specialist Kerry Grady

INFORMATION SYSTEMS

Manager, Network Services James C. Burgoyne
Supervising Sr. IS Specialist Carryl Blakemore

E-MAIL. FAX. INTERNET. MANAGE ALL YOUR COMMUNICATIONS RESOURCES. WITH VERANDA.
<http://veranda.tallysys.com/cio> 1-800-262-3877, ext. 2690 veranda.cio@tallysys.com

ON HIS VERANDA,
he's got quite a vantage
spot. He can tell why
traffic is so backed up.
Where a helping hand is
needed. Who sends the
most mail. And what
new jokes are making
the rounds.



verAndA™

ENTERPRISE MESSAGING REPORTER

YES! I need a better view of my company's e-mail, fax and Internet usage. Please send me the following FREE information on Veranda Enterprise Messaging Reporter.

- ☐ White Paper, *"Tally Systems Guide to Electronic Messaging Management"*
☐ Product Brochure

NAME TITLE
COMPANY
E-MAIL
ADDRESS
CITY STATE ZIP
TELEPHONE # OF USERS
FAX CIO



TALLY SYSTEMS

WITH OUR VERANDA, THE VIEW IS JUST AS GOOD.

Concerned that your communications infrastructure is not being used effectively? Relax. All you need is a different outlook. The kind you get with Veranda Enterprise Messaging Reporter.

Veranda is the first messaging and reporting system that lets you "see" utilization of every communications resource. Including e-mail. Fax. And the Internet. Veranda provides customizable reporting independent of messaging vendor, proxy server and operating system. So it functions as a management tool enterprise-wide. To help identify security breaches. Audit productivity. Plan network growth. Allocate chargeback costs across sites, departments or employees. And, ultimately, optimize overall infrastructure efficiency.

With Veranda, you get scalable client/server architecture, graphical query design

and data export for easy manipulation with desktop tools. You also get seamless integration with most messaging environments –

even environments consisting of multiple vendor systems, like Exchange,[™] Netscape[™] and Notes.[™]

Learn how to maximize productivity through enhanced e-mail, fax and Internet utilization. Contact us today. You'll discover that with our Veranda, your company never looked so good.

For our FREE product brochure or white paper titled "Tally Systems Guide to Electronic Messaging Management," call

1-800-262-3877, ext. 2690. Or visit our Web site @ <http://veranda.tallysys.com/cio>.

You can also send e-mail to veranda.cio@tallysys.com.

1997 Tally Systems Corp. All rights reserved. Veranda is a trademark and the Tally Systems logo is a registered trademark of Tally Systems Corp. All other trademarks are the properties of their respective holders.



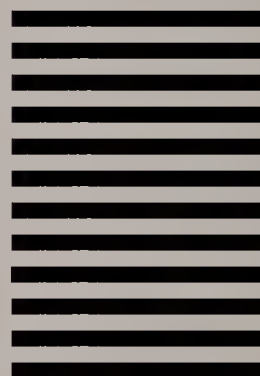
NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST-CLASS MAIL PERMIT NO. 21 HANOVER, NH

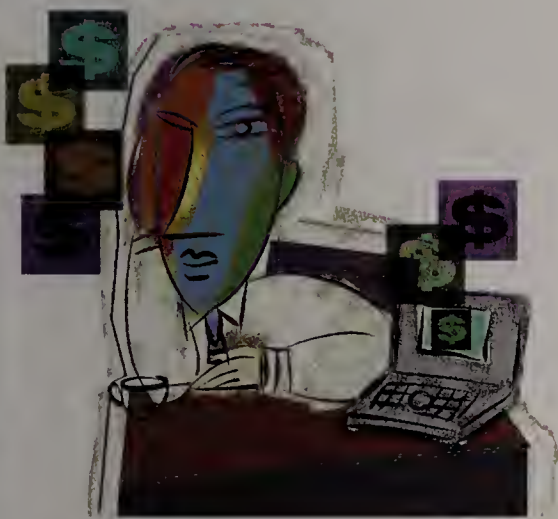
POSTAGE WILL BE PAID BY THE ADDRESSEE

TALLY SYSTEMS CORP.
P. O. BOX 70
HANOVER, NH 03755-9909



E-MAIL. FAX. INTERNET. MANAGE ALL YOUR COMMUNICATIONS RESOURCES. WITH VERANDA.
<http://veranda.tallysys.com/cio> 1-800-262-3877, ext. 2690 veranda.cio@tallysys.com

NET BUSINESS: COLLABORATION, CO-OPETITION & PROFIT



DECEMBER 7-10, 1997
CENTURY PLAZA HOTEL & TOWER
LOS ANGELES, CALIFORNIA

Nowhere in our institutional memory do we have the experience base to deal with the challenges the 'Nets provide... **alternate** distribution and marketing channels, **enterprisewide** collaboration, modern business practices, **partnerships** with competitors and **new** profit metrics.

Although they have acquired the **experience** to guide business practices, **managers** may sometimes lack the ability to adapt to the **dynamic** technologies that their younger **Web-savvy** counterparts possess. How will executives embrace these **new technologies** and the early majority articulate the **benefits** of this new business medium?

Net Business: Collaboration, Co-opetition & Profit, to be held December 7-10 at the Century Plaza Hotel & Tower in Los Angeles, will address these issues. Moderated by **Tom Davenport** and featuring CIO's vice president of technology, **Tim Horgan**, we will explore both the required multi-disciplinary partnerships and affiliations necessary for improving 'Net **business** results and **business mastery**.

CORPORATE HOSTS

BMC
SOFTWARE

Brio
Technology

Collectanea
Corporate DeskTop Library™

EBSCO
PUBLISHING

mk
MORTICE KERN SYSTEMS INC.

PEOPLE
Soft

SiliconGraphics
Computer Systems

Sun
microsystems



THE WORLD'S SHORTEST SHORT STORIES. *Four of a series.*

O N C E T H E R E W A S
A C O M M U N I C A T I O N S
M A N A G E R W H O G O T
S T U C K W I T H A N
O U T D A T E D P B X. T H E N
H E G O T S T U C K I N
T H E M A I L R O O M.

The End.

The Moral:

WilTel's best-of-class solutions will grow along with your company.

MAILROOM

If only he had called WilTel. We would have installed a WilTel Power Network™ solution like the Meridian 1 system. Then this story would have had a happy ending. Or should we say, beginning? Because at WilTel, our commitment to you doesn't end with the sale of your Nortel Meridian 1 system. We'll take responsibility for design, installation, Maintenance, Upgrades, Enhancements. Which means that both you and your network will live happily ever after.

WilTel **WILTEL MERIDIAN**

Williams
Communications Group
Company

YOUR PBX. OUR RESPONSIBILITY.™

For more information, call 1-800-333-3333

or visit our website at www.wil.tel.net

© 1997 WilTel, a Williams Communications Group Company. Meridian 1 and Meridian 1 are trademarks of Nortel.

In My Opinion

Enterprise applications that can be created are bounded only by your imagination.

WELCOME TO THE FIRST offering of *CIO Enterprise*. As I mentioned last issue, you will now find *CIO* in two sections. The first section covers the gamut of your interests as usual. Section 2 on the 15th of each month focuses on the enterprise as a whole.

When it comes to information technology (IT) in corporate America, the focus has shifted from the influential end user or department to the enterprise. The challenge for CIOs and business executives is to bring together the many islands of information that have been created over the past decade so that information can be shared throughout your enterprise and beyond.

Every month, *CIO Enterprise* will provide you with vital information and insights that will not only help you survive but prosper in the new information age. Information that leads to knowledge and wisdom will change our business lives faster than any of us can imagine. In short, hang on tight; you haven't seen anything yet.

The enterprise applications that can be created are bounded only by your imagination. Call centers that provide better customer service and support save companies millions of dollars and increase customer satisfaction. Data mining has proved that there's gold in records of past purchase behavior for those companies smart enough to utilize them. Those are just two examples; there are thousands more. What is your enterprise doing to take advantage of the wealth of data

scattered around your company?

Those organizations that do not take advantage of better, faster, more actionable information do so at their own peril. The vital job of CIOs and IT and business executives is to embrace information and create practical ways to make the transition from Old World structures to the brave, new enterprise age of the 21st century.

We at *CIO* are excited about the opportunity of being your guide during one of humankind's most exciting journeys. Send your comments and suggestions about what you'd like to see in our pages to jlevy@cio.com.

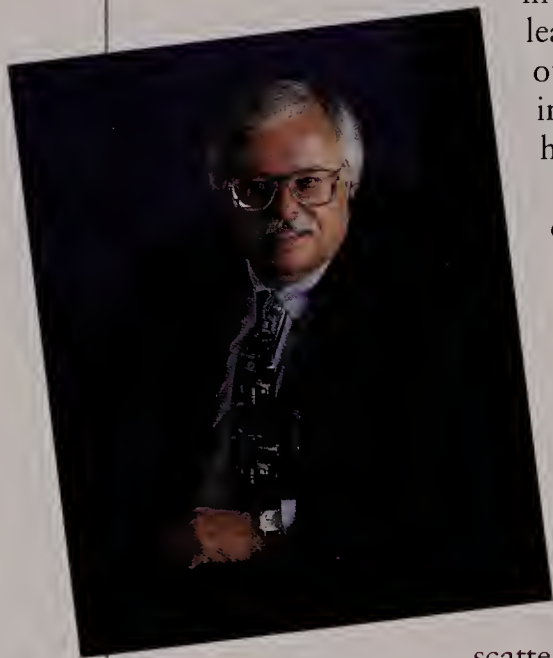
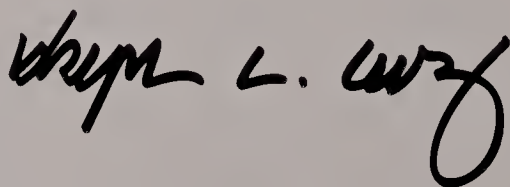


PHOTO BY WEBB CHAPPELL

On Our Web Site

cio.com
<http://www.cio.com>

Web Around the Clock

Curious about the Web?
Wondering if the Internet is the way to go at your company?
Be sure to visit our site for answers to these questions and for past articles about the business benefits of the Internet.
webbusiness.cio.com

Get Connected

Visit the new **CIO Connection**, a general forum about life on the front lines of IT. Share your questions and answers, and trials and triumphs with our staff and your peers.
www.cio.com/forums/cio.html

Internet Policy

Catch a sneak peek of the *CIO* study "**Maximizing the Internet: Policies, Procedures & Best Practices**," which focuses on understanding the policy choices companies are making regarding the Internet.
www.cio.com/CIO/survey.html

How to Reach Us

E-mail: letters@cio.com

Phone: 508 872-0080

Fax: 508 879-7784

Address: CIO Communications Inc.,
492 Old Connecticut Path, P.O. Box
9208, Framingham, MA 01701-9208

Web Site: www.cio.com

Subscriber Services: 800 788-4605;

Fax: 508 879-7899;

E-mail: denisep@cio.com

Reprints: Reprints are available by calling 508 935-4539.



Sir Isaac Newton took known facts, formed a theory to explain them, deduced consequences, compared results with other data, and created a means for explanation and prediction.

Nearly rendered unconscious by a large, falling apple, Newton awakened to the realization that he had just discovered gravity. This seemingly insignificant event led him to provide humankind



HOW CAN A BLOW TO THE HEAD HELP YOU SEE MORE CLEARLY?

AT ACXIOM, WE KNOW THAT WHEN THE RIGHT DATA IS DELIVERED, KNOWLEDGE FOLLOWS QUICKLY.

with a bold new concept of the universe.

At Acxiom, we've built a multi-national company on the powerful premise that valid data in the right hands at the right time can have a powerful effect on your world.

Through Acxiom's integration, management, and split-second delivery of data to companies across America, we are helping

our customers turn information into profits and providing data warehousing and business decision support for the most complex marketing challenges.

As the leading provider of data and information services, Acxiom can help you enhance your universe and explore it better.

Build on your knowledge with Acxiom. It's how you know.



ACXIOM®

HOW YOU KNOW

1-888-3ACXIOM • WWW: <http://www.acxiom.com>

Privacy assured

Edited by Cheryl Dable

Plugged in

O Pairs 14

In Their Own Words 14

Corporate Warriors 18

Tracking Expenses 18

Clean Tech 20

Retail Technology

Solution in Store

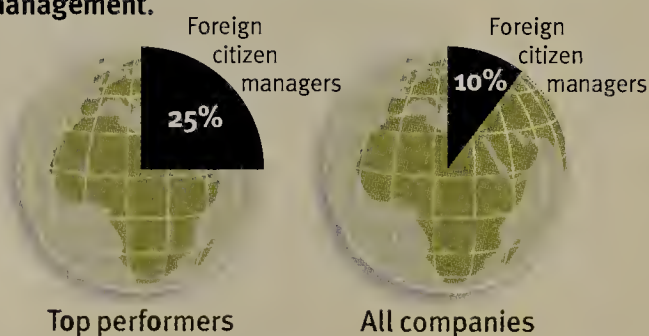
THE RETAIL INDUSTRY has always been a foot-dragger in the area of information systems. Many retailers today are wedged between a clothes rack and the wall—they can't scrap their transaction-processing legacy sys-



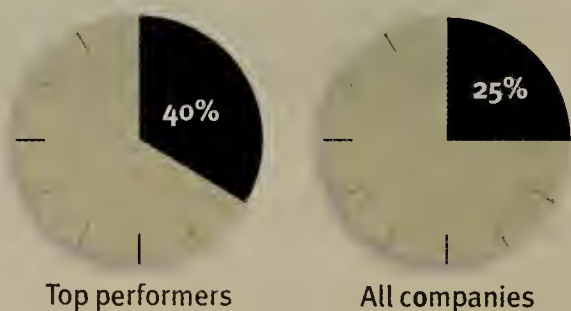
Survey Says

Thinking Globally

Companies that view themselves as most successful and most global have more foreign citizens in top management.



Leaders who consider their companies very successful globally spend more of their time on global issues.



SOURCE: CONFERENCE BOARD SURVEY OF 117 CEOs

tems, but upgrading or adding new features is incredibly expensive because of all the custom coding required.

"Right now, a huge amount of money and effort is spent on integration in the retail industry," says **Michael Campbell**, president and founder of Campbell Software Inc., which develops retail applications. "You end up with the customer owning the integration code and the vendors pointing fingers at each other. Everyone would rather be putting that energy into creating new products."

Campbell Software is part of a consortium of software and hardware vendors pooling resources to change all that. The effort, spearheaded by Microsoft Corp., will develop standards and a flexible technology infrastructure specifically for the retail industry. Other participants in the ActiveStore effort (named for Microsoft's ActiveX technology, which will be the standard language that links systems together) include Fujitsu, IBM Corp. and NCR Corp.

The software vendors have committed to developing applications that link together and run on a Windows NT platform. Microsoft has agreed to work with the hardware vendors to ensure NT has the speed and reliability to process transactions.

The goal is to coax the retail industry into taking a



The industry is still reeling
from our SYSTIMAX® SCS

Megaspeed
achievements.

Plugged In

quantum leap forward in technology, Campbell says. Potentially, the ActiveStore standards would allow a retailer to switch to an NT platform (which will have more packaged product options), spend less money and time on integration, and add new capabilities faster. It also wouldn't have to fight the uphill battle of recruiting and retaining legacy programmers.

For more information on the ActiveStore program, visit www.microsoft.com/industry/retail_dist/astore_overview.htm.
—Cheryl Dable

In Their Own Words

“Scientists will eventually focus their efforts on harnessing the only truly unlimited source of energy on the planet: stupidity. Energy companies will place huge hamster wheels outside convenience stores and offer free lottery tickets to people who spend five minutes running inside the wheels, which will be connected to power generators.”

—Scott Adams, creator of Dilbert

O Pairs

Vested Interest

THIRTEEN YEARS AGO, **David Pottruck** joined the marketing department at Charles Schwab & Co. Inc., where an information systems (IS) applications developer named **Dawn Lepore** already worked. He was a business executive with an appreciation for information technology; she was a technologist with a honed business sense. Together, Pottruck and Lepore forged a team that bridged their respective disciplines.

Today, Pottruck is president and CEO of Charles Schwab & Co., the brokerage subsidiary of San Francisco-based Charles Schwab Corp., and also sits on its board of directors.

Lepore is executive vice president and CIO. The long-term working relationship between the two has blossomed into an enterprisewide catalyst for IS/business alignment. “To our view, technology is the solution,” Pottruck says. “Whenever I give speeches, I say, ‘We are a technology company that happens to be in the brokerage business.’ I like to believe the people who come here to work within [the IS organization] aren’t just hired help; they are the heroes of the company. They create opportunities for the business people to be successful.”

To date, those opportunities include:

e.Schwab, the company’s 2-year-old online investment tool, which has helped Schwab attract 700,000 active online accounts and \$50 billion in customer assets—nearly half of what Forrester Research Inc. estimates to be the entire \$111 billion electronic brokerage industry.

I Want Information Now (IWIN), a client/server application that gives Schwab’s customer service representatives a single interface to customer account information. Incoming calls, which used to absorb up to 30 minutes, now can be handled in two.

VoiceBroker, a voice recognition tool that satisfies customers’ call-in requests for stock quotes. The system recognizes 16,000 variations on the names of 5,000 registered stocks, so customers can request a quote for “International Business Machines,” “IBM” or “Big Blue” and get the same answer—



Charles Schwab’s David Pottruck and Dawn Lepore build a profitable CEO/CIO relationship.



Luc W. Adriaenssens,
Systems Applications Director
SYSTIMAX® SCS

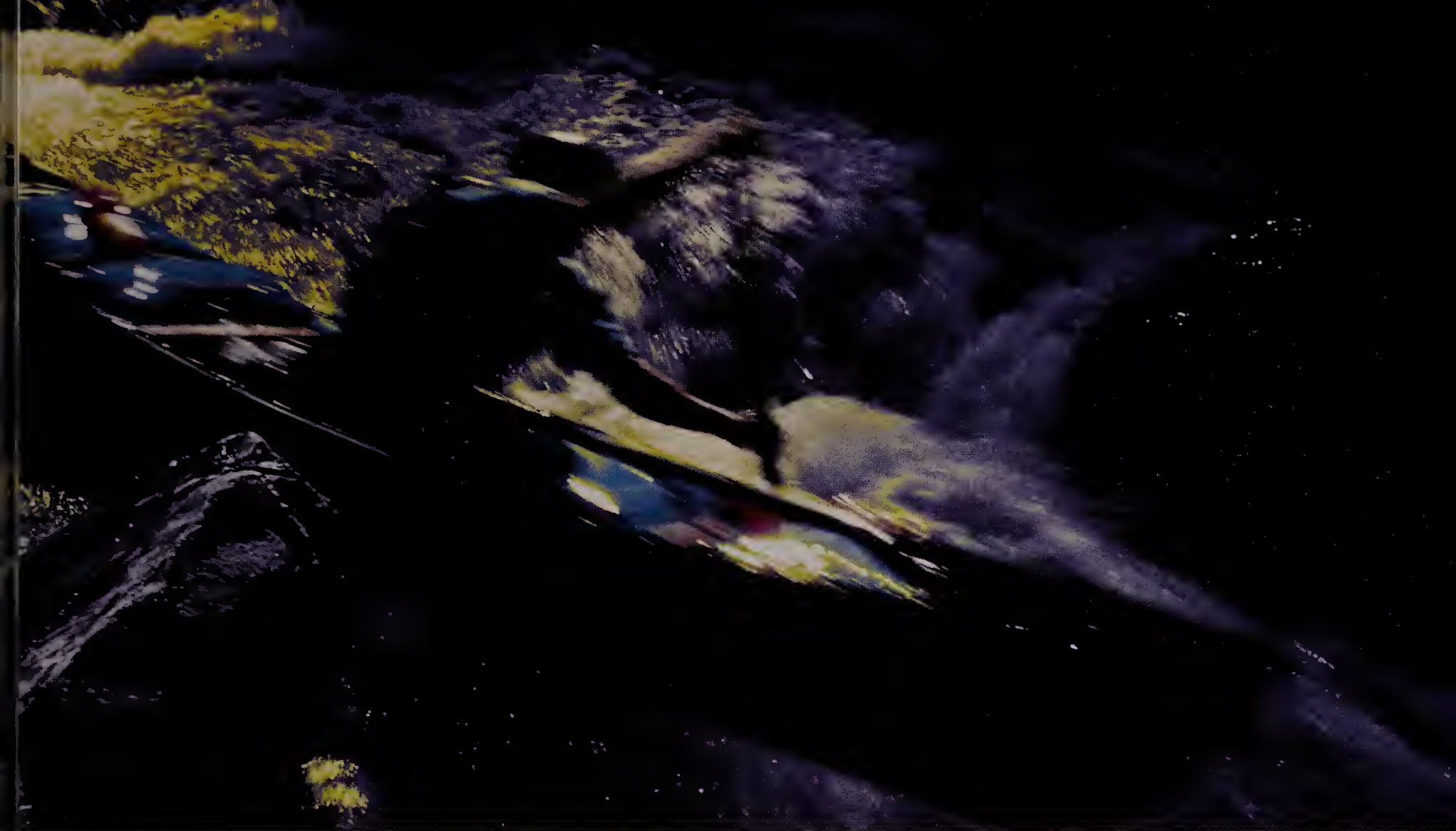
Meanwhile, we're well into Gigaspeeds.

Say hello to SYSTIMAX® SCS
GigaSPEED Cable. So revolutionary,
it defies categorization, with
speeds up to 1.2 Gbps. That's 6X
faster than current CAT 5 (a jump
equal to running a 30-second
mile). 78% more bandwidth.
Better balance. And less crosstalk.
Backed by a 20-year product &
application assurance warranty. To
find out more, use the card below.
We know networks.
Every twist. Every turn.™



S
Y
B
A
S
E
.
C
O
M

IF
INFORMATION
IS THE
LIFEBLOOD
OF YOUR BUSINESS,
GET READY
FOR A
TRANSFUSION.



CONSIDER THIS A TRIPLE SHOT OF IRON AND ADRENALINE, HEADED RIGHT FOR THE HEART OF YOUR COMPANY'S INFORMATION SYSTEMS. IT'S CALLED THE ADAPTIVE COMPONENT ARCHITECTURE,TM FROM SYBASE.[®] IT'S A COMPLETE, INTEGRATED, END-TO-END ARCHITECTURE FOR HANDLING ALL YOUR INFORMATION NEEDS, FROM HIGH PERFORMANCE DATABASE SERVERS TO LEADING EDGE MIDDLEWARE AND ENTERPRISE DEVELOPMENT TOOLS. ► THINK OF THE ADAPTIVE COMPONENT ARCHITECTURE AS THE FOUNDATION FOR BUILDING TOTALLY OPEN. THAT'S BECAUSE TO WORK WITH EVERYTHING IN WHICH PLATFORM OR VENDOR CREATE NEW CUSTOMER-CENTRIC

INTRODUCING
ADAPTIVE
COMPONENT
ARCHITECTURE

YOUR FUTURE. A FUTURE THAT IS THIS ARCHITECTURE IS DESIGNED YOUR ENTERPRISE, NO MATTER YOU USE. YOU WILL BE ABLE TO COMPUTING APPLICATIONS THAT USE STANDARD COMPONENTS DEPLOYED THE WAY YOU WANT ON ANY TIER, ACCESSING ANY DATA. AND YOU'LL BE OPEN TO THE ADVANTAGES OF THE INTERNET AND FUTURE TECHNOLOGY—NO MATTER WHERE IT COMES FROM. ► TO LEARN MORE, CALL FOR OUR WHITE PAPER AT 1-800-8SYBASE (REF.#ACCI). AND IF YOU'D LIKE TO SEE HOW WE'VE HELPED SOME VERY SUCCESSFUL COMPANIES FUNDAMENTALLY IMPROVE THE WAY THEY WORK, VISIT US AT WWW.SYBASE.COM/SUCCESS.



T H E F U T U R E I S W I D E O P E N .TM

Plugged In

at one-fifth what it costs Schwab employees to provide these quotes personally.

The latter project is particularly noteworthy, Pottruck says, because it originated in IS.

"More and more, ideas come from the technology people saying, 'Can you imagine this?'" he says. "Technology for technology's sake is not tolerated around here."

Pottruck credits Lepore with instilling a dual business/customer focus within IS.

Likewise, she credits him for creating an atmosphere in which business professionals embrace new technologies and new ideas. "He is not only knowledgeable about technology, he cares about IT [information technology]," Lepore says. "When I go to him about stuff, he's not yawning, and his eyes aren't glazing over."

Together, with support from company founder Charles R. Schwab, Pottruck and Lepore set an example for IT and business alignment that business and IS employees can follow.

—Tom Field

Corporate Warriors

Samurai Shamurai

AS ANY CEO WORTH THE BRASS IN THE NAMEPLATE WILL TELL YOU, MOST management problems begin when the evil spirit starts haunting the executive team. That and other nuggets of wisdom can be found in Don Schmincke's *The Code of the Executive: Forty-Seven Ancient Samurai Principles Essential for Twenty-First Century Leadership Success* (Charles E. Tuttle Co. Inc., 1997). The premise of this, ahem, management tome is that the Japanese samurai warriors were the ancient equivalent of executive officers. Some of the book's cheery gems of advice to the modern samurai include: "One who is an executive

must before all things keep constantly in mind, by day and by night, the fact that he has to die."

And if that doesn't make you want to commit hara-kiri, the book goes on for pages about the dangers of corporate poltergeists: "There is always an evil spirit that haunts the executive team. The first way the spirit curses the team is by causing the accidental death or epidemic disease of some young executive...who promises to be of great value in the future." And you thought Henderson's bout with Ebola was just bad luck.

Making his case for the samurai/executive parallel, Schmincke equates

swordsmanship with what he calls, "informationship," or wielding information wisely. Picture it—two executives, their laptop computers glinting in the sun, whacking the stuffing out of each other with their modems. Majestic, no?

And for the social climber samurai among the exec set, the book also warns against traveling with cheap luggage that will dishonor your company's name. After all, it's widely known that an ancient samurai wouldn't be caught dead toting a cheap Gucci knock-off garment bag.

—Cheryl Dahle



Tracking Expenses

A Ta\$K-Oriented Approach

EVER FEEL LIKE YOU FRITTER AWAY A day spending the majority of your time on the things that matter the least? Many CEOs are getting that same out-of-control feeling on the companywide level. Does the sales force spend time on the activities that bring the highest return? Does the operations staff waste time on tasks that aren't worthwhile?

One way to find the answers to those questions is to use Activity Based Management

(ABM) tactics. ABM is the accountant's version of a basic law of physics: For every business action or activity, there is a cost. Derived from activity-based costing, which ties costs to business activities or processes, ABM identifies what activities, policies and technological applications consume resources, generate costs and cause work to be performed.

By identifying which actions and processes create costs, managers can decide whether discrete activities are worthwhile and cut accordingly. For example, Boise Cascade Office Products applied ABM to analyze which customers added the most to Boise's bottom line. One result: Salespeople are no longer paid commission on orders that do not achieve a gross margin big enough to cover the costs of recording, processing and deliver-



When you're shelling out \$4,000,000 to ring in the Year 2000, remember:

SAS[®] software didn't drop the ball.

While other software companies scramble to help you adapt your programs to handle the Year 2000 crisis, SAS Institute has just one question: *What* crisis? SAS software solutions—from data warehousing to data mining, OLAP to applied analysis—are ready to handle dates through the year 20,000 AD. And you can easily change the interpretation of two-digit years to the 100-year span of your choice.

SAS software customers won't need to shell out the estimated \$3-\$4 million it will cost the average company to address the Year 2000 issue. So isn't it time you invested in the world's best decision support solutions? From a vendor that will keep you on the leading edge of technology into the new millennium—and beyond? Just visit us at www.sas.com/y2k/ or give us a call at 919-677-8200.

 **SAS Institute Inc.**
The Business of Better Decision Making

E-mail: cio@sas.com

www.sas.com/y2k/

919.677.8200

In Canada 1.800.363.8397

SAS is a registered trademark of SAS Institute Inc. Copyright © 1997 by SAS Institute Inc.

Plugged In

ing the order. If Boise loses money on the customer, why should the salesperson be paid?

If you suspect your business is hyperactive, as it were, and want to

learn more about ABM, the American Productivity & Quality Center and Arthur Andersen have a study for you. The two organizations created a study of best practices in three specific areas

of ABM: nonfinancial ownership, systems development and reporting.

The study examines the practices of about 150 companies and identifies the top 15 practitioners of ABM from these responses. That research generated the following list of tips in three areas of ABM:

Nonfinancial Ownership

How companies persuade line business workers to take ownership of ABM information

- Link ABM information to operational goals and initiatives.
- Successful pilot tests, or "early wins," help prove ABM value.
- ABM implementations should be funded and driven by the operations side of the business.
- Tie use of ABM to compensation to encourage ownership.
- Periodically review ABM results to help document success.

Systems

Information systems used for ABM

- Fully integrate IS from the start to save time and money in the long run.
- Data integrity is paramount.
- Access to information and ease of use are key to the successful use of ABM information systems.
- Reconciling data on ABM systems should be simple and fast.
- Involve dedicated IS people early on in design and development.

Reporting

Reports generated by the information systems

- Users need to be able to easily build customized reports.
- Make sure reports are designed similarly across units, so that managers can compare apples to apples.
- Concentrate on making money and creating business value rather than on cutting costs.
- Users need an intuitive visual display.

For more information or to purchase the report, call the American Productivity & Quality Center at 800 776-9676 or visit its Web site, www.apqc.org.

—Carol Hildebrand

Clean Tech

One Hand Better Wash the Other

ONE OF PARENTHOOD'S chief duties has always been to develop an automatic voice loop along the lines of, "Have you washed your hands? Well, go wash them before you come to the table. I don't care if you just did it yesterday." Somehow, however, that basic lesson still eludes many. A recent survey sponsored by the American Society for Microbiology and Bayer AG, and reported in *The Wall Street Journal*, found that only 61 percent of men and 74 percent of women wash up after a bathroom visit. While the thought of the great unwashed masses glad-handing around your office is perhaps only a little disconcerting, what about the guy at the deli counter who served you lunch? What about the people you employ to serve the public?

Enter the unfortunately named — but potentially very useful — Hygiene Guard. Hygiene Guard is the first offering from tiny Net/Tech International Inc., a 7-year-old company based in Red Bank, N.J. **Mark Hersh**, Net/Tech's vice president of sales and marketing, says the product is creating quite a stir, particularly in the restaurant and health-care industries.

Hygiene Guard is an infrared system that can be installed in a bathroom, kitchen or any place that requires good hygiene from employees. The infrared sensor picks up on a "smart badge" worn by potential hand washers and makes it flash, light up or beep, depending on what the company wants it to do. "For that badge to be cleared and reset, you must do two things," says Hersh. "You must get soap from the soap dispenser, and you have to stand in front of the sink and wash your hands for at least 20 seconds." All badges are individually coded, and any infractions are logged in a central computer system.

This may sound like Big Brother, but bad hygiene is a major liability in many industries. "Last year alone, published statistics indicate as many as 33 million people became ill from food-borne disease," notes Net/Tech President **Glenn E. Cohen**. Granted, those statistics can't all be blamed on lazy hand-washing, but an ounce of prevention could save some lives in this case. Says Hersh: "Companies need to know when Johnny doesn't wash his hands. Education is hugely important." Hygiene Guard is currently in beta test sites at the Tropicana Resort and Casino in Las Vegas and the Georgetown University School of Nursing.

—Carol Hildebrand



You know the feeling. Your boss appears in the doorway, asking for information that your current HR software just can't produce on demand.

Fortunately, with a Human Resource Management System from ADP, everything from benefits projections to staffing analyses is just moments away. Because our systems are so flexible, they allow you to access the information you want, the way you want it.

And with over 20 years of HR experience, ADP will be there to guide you every step of the way. From current system analysis to new system implementation to ongoing maintenance, we'll provide a support team dedicated to your needs.

No wonder over 5,000 companies rely on ADP for HR solutions. Whether your company is LAN- or WAN-based, requires single-user or client-server platforms, we provide solutions that seamlessly integrate your HR, benefits and payroll information.

So the next time your CEO asks for information, you'll be able to deliver it on the spot. To find out more, visit us at adp.com or call for a free demo disk.

1 800 CALL ADP
ext. 388

www.adp.com

Finally, an HR system
that understands
"Can I get back to you
on that?" is not an
appropriate response
to your CEO.

HUMAN RESOURCES BENEFITS PAYROLL



The Hype and the Mighty

A charter to cut through the techno-buzz to find what's real

BY LEW MCCREARY

I WAS A MIDDLE-AGED HYPESTER. ACTUALLY, I GUESS I still am. Most of us in the hype racket, including me, don't set out to create hype. It just happens. (Do homebuilders set out to create slums?) Circumstances conspire. Stuff gets written, accumulates, is believed, exaggerated, repeated, distorted. Assertions circle back to their original asserters and are, in turn, offered up as independent validation. It all feels so real. And yet....

Despite the illusion of individual thought and action, hype is a group activity. It involves our collaboration—writers, readers, analysts and industry players interacting together—to inflate a slim hope, a slender possibility, to load-bearing proportions. Things fly apart. Over time, a lot of collapsing is inevitable.

But it's not my fault. I'm smart and honorable. I think I possess reasonably sound judgment and a sense of fairness. I work with dedicated, energetic colleagues engaged in the pursuit of journalistic truths. We're proud of what we do; we believe we give readers something of value.

It isn't your fault either. Most readers are astute, discerning, skeptical. You're alert for the hollow ring, the extravagant claim. You want the skinny, not the fat—a few fresh ideas, a little bit of much-needed decision support in a too-confusing and fast-changing world. And that's exactly what we want to give you.

So what's the problem?

Smart and worldly as we all may be, we're still drawn to golden promises. (If we weren't, there would be no marketing!) Whether explicit or merely implied, it's hard to hold out against alluring visions. To do so becomes tedious and ultimately unsatisfying, and requires continually challenging the

viability of things we'd very much like to believe. Eventually, we want our thorny and sometimes uncomfortable resistance to be overcome, so that we can believe in something exceptionally promising. (So fervent, for instance, is the wish to believe in the exceptionalness of a Tiger Woods that he can hardly fail to disappoint his over-the-top believers.) As "success stories" cascade in the trade and business press, who wouldn't be tempted to give, say, reengineering a whirl?

Then, too, there's the tonic effect of novelty. All of us—writers and readers alike—become reflexively enthusiastic when something new and apparently different comes along. Newness is interesting. If nothing new ever surfaced, we'd go nuts. But—eager as we are for the next big thing—sometimes we fail to recognize that the newness itself is fraudulent, little more than something old dressed differently. That's when critical thinking fails us.

Even genuinely novel developments can distract us from seeing their limitations: The client/server concept may ingeniously harmonize disparate technology platforms, but in practice it's a costly pain in the butt to do well. The best Web site is only as sound as the underlying business model. No amount of well-deployed push technology can overcome the bad business judgment of the "pushee." And, despite what you may have heard, JavaScript probably won't be running your customer service function any time soon.

THE CHARTER OF THIS COLUMN IS TO DECLARE A hype-free zone in which to look at information technology—and ideas about its strategic exploitation—in a critical light. We hope to add the often deficient element of scrupulous disbelief to considerations of what, if anything,

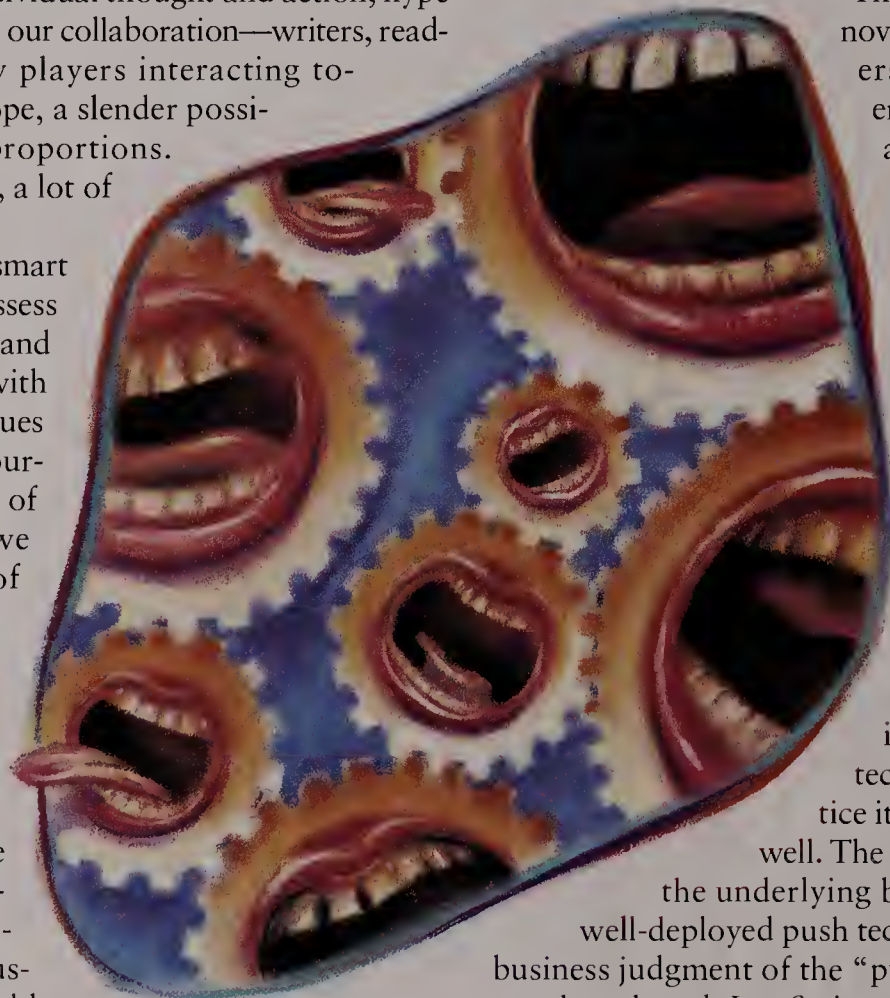


ILLUSTRATION BY SAM HUNDLEY

Get the competitive edge!

YES, please enter my one-year subscription (21 issues) to CIO magazine and bill me later for only \$75, a savings of \$23 off the basic rate!

Name _____

Title _____

Company Name _____

Address _____

City _____

State _____

Zip _____

The basic one-year subscription rate for CIO magazine is \$98. This is a domestic rate only (US and Canada.) The foreign rate is \$110 prepaid in U.S. currency.



**New Order ---
Process Immediately!**



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO.1020 FRAMINGHAM, MA

POSTAGE WILL BE PAID BY ADDRESSEE



ATTN: CIRCULATION DEPARTMENT
PO BOX 9208
FRAMINGHAM, MA 01701-9486





SNA-FRAME RELAY SOLUTIONS

If your company's mainframe data is being run on a private line, you're actually paying for the whole cow.

That's because you have to pay for a private line even when you're not using it.

By converting your SNA traffic from private line to MCI's frame relay network, you can save up to 40%.

Doing it is easier than you think. You won't even need to invest in new equipment.

And with those savings, your company can afford other modern necessities such as a Web site or intranet.

For more information about why it's time to put your old system out to pasture, visit www.mci.com or call 1-800-659-5479.

Why buy
the whole thing
when you just
need the milk?

Is this a great time, or what?





THE SIXTH ANNUAL

Enterprise Value Retreat & Awards Ceremony

February 1-4, 1998

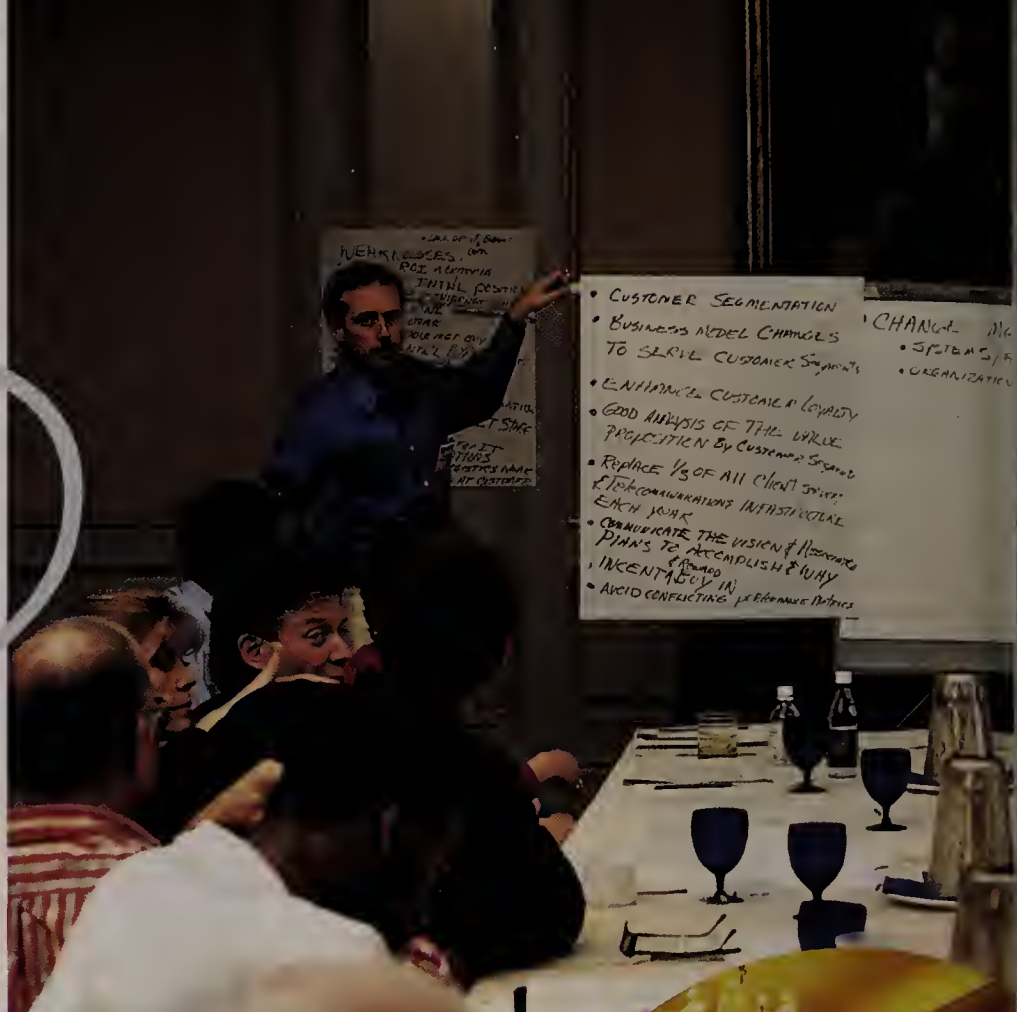
Ritz-Carlton Laguna Niguel

Dana Point, California

Channels of distribution and the ways companies add value and organize their work have all changed dramatically over a very short period of time. As we move closer to the 21st Century, explosive new opportunities are being created by the Internet and intranets. Plotting the course in this new world is an extremely difficult and challenging task.

Through a combination of case studies and interactive lectures, we will learn how a \$2.3 billion corporation, with major IT investments and strategic planning, is transforming its business model. Systems reengineering and an aggressive Year 2000 strategy are supporting this case study enterprise in capitalizing on a highly competitive and rapidly changing marketplace.

For the most powerful learning experience and networking opportunity of the year, visit www.cio.com or call 800 355-0246 to reserve your place in the 1998 Enterprise Value Retreat.



"Unlike any conference. A must for senior IT management."

Robert Schwartz
General Manager
Information Services
Matsushita Electric Corp.

"I have never attended a retreat more relevant to my current business challenges."

Irving Zaks
Vice President and General Manager
Information Systems Division
GTE

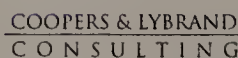


Proud Underwriter of
CIO Magazine's Enterprise Value Awards:

Enterprise Value Retreat Partners:



BOOZ-ALLEN & HAMILTON



Reality Bytes

to do when you hear the beckoning call of the latest buzzword. If a juggernaut of vogue thinking threatens to overwhelm good sense, Reality Bytes will try to cut through the fog. If we think you

more enduring sources of business value—such as the ability to inspire and motivate your people, or to wisely interpret diverse pieces of information, or to anticipate a new market (or a new way

value proposition and avoid the kinks in the rails.

Why would anyone trust a confessed hypester to deliver on such a promise? Hey, who better? Those of us who'll

contribute to this corner have been in the business long enough to hear—and even recognize—our own stuff circling back. And we know the look and feel of a house of cards. Sadly, we're not omniscient. That's where you come in: We need your input. Please let us know where the world of tech-

nology feels shakiest to you. Send e-mail to reality@cio.com, and we will load-test the structure. **CIO**

Lew McCreary is editorial director of CIO Communications Inc. He can be reached at mccreary@cio.com.

Smart and worldly as we all may be, we're still drawn to golden promises. Eventually, we want our thorny resistance to be overcome, so that we can believe in something exceptionally promising.

should run, not walk, in the other direction, we'll say so.

But don't misunderstand us. We're definitely not Luddites. We believe very strongly in the business value of well-applied technology. We just don't believe it's a suitable replacement for other,

of competing in an existing one). Technology isn't a comb-over, and yet too many executives tend to see it that way. It's hard to do technology well and even harder when you fail to understand what it can't do. Our goal is to help readers better understand the

WHAT'S IN IT FOR YOU?

With dramatic technology changes occurring in Information Systems, CMG97 offers technical and management sessions that focus on cutting-edge topics. Areas covered include:

- Distributed Systems
- System/390
- Workload Characterization/Modeling
- I/O Subsystems
- Enterprise Systems Management
- Internet, Intranet and the World Wide Web
- Database & Transaction Processing

Want More Information?

INTERNET: <http://www.cmg.org>

PHONE: 1-800-4FOR CMG or 609-401-1700

FAX: 609-401-1708

COMPUTER MEASUREMENT GROUP, INC.

151 Fries Mill Road, Suite 104
Turnersville, NJ 08012

CMG97 OFFERS YOU

- Industry leaders' view on key future topics:

Colleen F. Arnold, IBM

Y2K Strategy

Katherine K. Clark, Landmark Systems Corporation

Performance Management Directors From A to Web

William H. (Bill) Inman, Pine Cone Systems

Data Warehouse: Architecture and Implementation

Topics for 1997

Larry Thomson, EMC Corporation

Enterprise Storage Directions

- Extensive exhibitor program, including **CMG97 Exhibit Hall**, user group meetings, and presentations by industry vendors.
- Tutorials, Panels, Workshops, Networking opportunities, informal information, and *more!*



Separating the fact...from the fiction

Come see and hear fellow professionals solving real world problems in real world environments at

CMG97, December 7-12 in Orlando



**WHAT WOULD
IT TAKE TO
STRETCH
YOUR IDEA OF
A NETWORK
COMPUTER?**

If you think a network computer isn't much more than an inexpensive way to reach Java™ and Web apps, you're right. Unless you're talking about a Tektronix® Business NC. Unlike other NCs, ours are a bit more, ...um, elastic. Because they also support access to PC, legacy, and UNIX® applications. Not to mention high-speed 100Base-TX networking and full-motion video—for things like desktop employee training and animated assembly instructions at manufacturing plants—as well as anything you might be planning for tomorrow. Even if it is outside the box. See, if you can dream it up, we've got a way to get you there.

To expand your definition of what a network computer can do, call 1-800-547-8949, and press 1 for sales, or visit www.tek.com/VND



Tektronix®

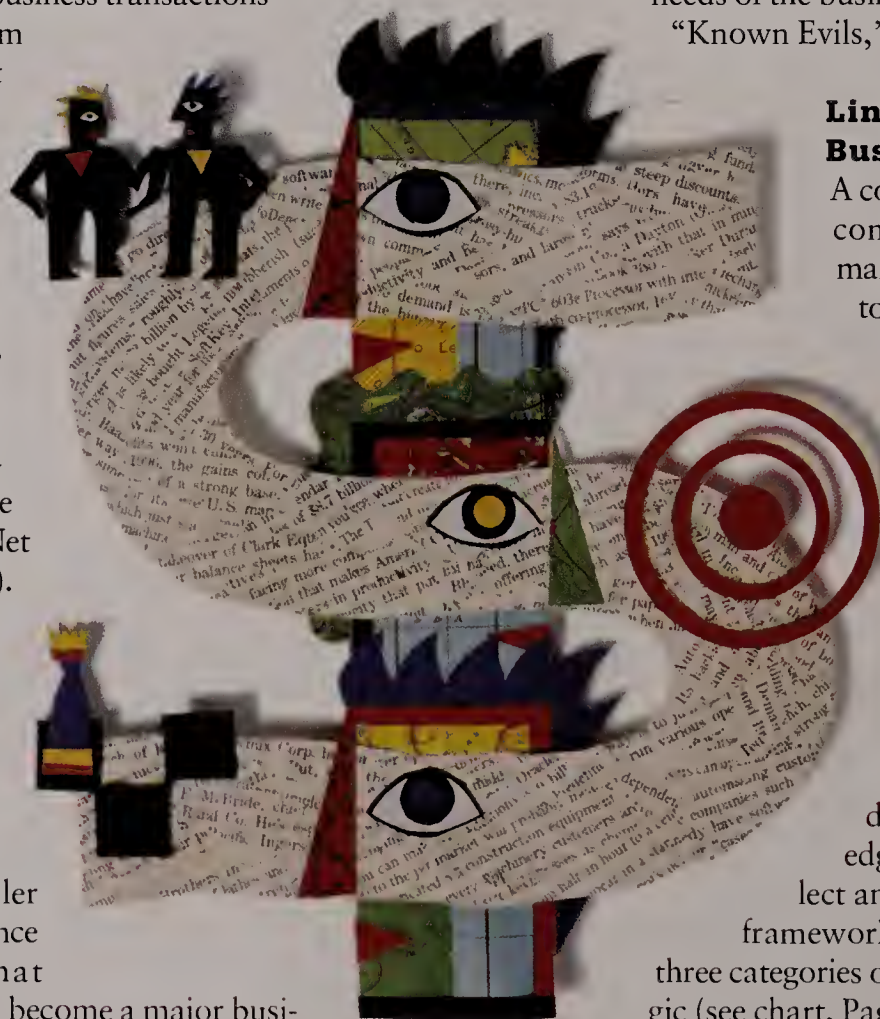
What you don't know can hurt your ability to gain—or maintain—competitive advantage. But tailor your investments in knowledge management to the kind of knowledge your company needs.

WHEN SCHLUMBERGER LTD. BEGAN BUILDING a global corporate network in 1991, the goal was merely to facilitate communication among employees spread out across more than 90 countries. No one anticipated the wide range of business benefits that would result. Today, engineers, scientists, business people and customers alike rely on the global intranet for real-time updates of technical information and analysis, online business transactions and file transfers. The system has helped the company cut costs, enhance staff productivity, get new products and services to market faster, and, most important, increase revenues by attracting new customers. In the past six years, Schlumberger has earned an estimated 668 percent ROI on its \$72 million investment—and a CIO Enterprise Value Award to boot (see “Net Results,” CIO, Feb. 1, 1997). Despite its relatively humble beginnings, Schlumberger’s global intranet is now widely recognized as a leading example of the benefits of investing in exploiting knowledge.

A quick review of bestseller lists and professional conference offerings makes clear that knowledge management has become a major business trend. As with many trends, the efforts and successes of early adopters have been both distorted and made so generic that some companies' knowledge management efforts

A company's intellectual capital (IC) comprises its articulated and formalized ideas that are ideally applied to produce valued assets. Although a lot is being written in the business press about intellectual capital and knowledge management, clear recommendations for starting knowledge management initiatives are not readily available. In our experience, the most effective approaches are those tailored to the type of knowledge being sought. To help companies determine what kind of knowledge they need and how best to collect and share it, we have developed a framework for considering investments in varieties of IC: general, focused and strategic. (Page 30).

General IC is the broadest category and refers to business- and industry-related facts and opinions about markets, customers, products and so forth. Focused IC pro-



Simplifying Complex Technology

Finally, an information systems consulting company that affordably, enthusiastically and responsibly delivers superior value, day after day, that also can leverage a variety of your needs.



Spectrum Technology Group:

Strategic IT Consulting at its best, especially data marts and data warehousing.

CIBER Network Services:

Growing expertise in WAN, the Internet, Intranets; electronic commerce backbones.

CIBER Information Services:

- Programming Services
- Year 2000 Support
- Project Management
- Outsourcing

Business Information

Technology:

Leading national PeopleSoft implementations: HR, Financial, Manufacturing and more.

Over 50 offices nationwide, plus Canada

Over 700 clients

Over 3,500 employees

Growing over 40% per year

One-stop shopping!

CIBER

For more information, call 1-800-CIBER99 or visit our web site at <http://www.ciber.com>

Intellectual Capitalism

vides insights into discretely defined business processes, that is, activities and workflows. Strategic IC encompasses that body of knowledge (often organization-specific) about the few key sources of a company's competitive advantage. In short, general knowledge is what a business needs simply to do business; focused knowledge keeps companies in step with their peers; and strategic knowledge is the source of competitive advantage that creates industry leaders. Developing and managing these three types of IC require three different kinds of investments: structured sharing, building focused competency and building strategic competency.

Structured Sharing

General IC includes the knowledge required to perform and do business in a given industry or market. Although such knowledge may be gained through formal education, it is most likely obtained through social interactions among colleagues at work. Informal knowledge sharing has long been a fun-

The most successful incentives for sharing knowledge emphasize peer esteem and the value of being a team player.

and procedures for various business activities into existing training programs and even launching modest research initiatives to identify emerging market trends. Each of these structured sharing practices collects, centralizes and then makes readily accessible throughout the company intellectual capital that was previously available to only a few people on an informal basis. Incentives for sharing knowledge are often part of these initiatives as well; the most successful practices emphasize peer esteem and the value of being a team player rather than provide any direct monetary or other tangible reward.

An example of such structured sharing comes from a medium-sized computer manufacturer. This company improved its approach to mar-

making the next sales call. Although the company has no precise measure of the benefits of the repository, anecdotal evidence from many sales reps suggests it has become a key tool for improving their effectiveness.

Building the repository was a relatively low-cost effort that has added functionality to the company's growing intranet. Submitting an entry takes a small amount of time, and an administrator maintains the repository as a regular part of his overall intranet responsibilities. While this low level of investment provides clear benefits, the value of this approach to IC management is limited. Note that such practices do not explicitly improve the sales reps' competency at selling. Rather, they provide information that the sales staff must then interpret and apply on their own. Although this repository manages information efficiently, it does not necessarily capitalize on the knowledge gained from strategic selling efforts. The repository presents information with a few filters and some searching and sorting capability, but it does not provide value-added analyses or prepackaged assessments. Sales reps do not contribute post-contact analysis on why they succeeded or failed in closing a sale. Nor is there an investment in analyzing marketing trends or key traits of exemplary sales reps.

Building Focused Competencies

An area with greater potential payoff from IC management is focused knowledge. This category includes the store of experiences, lessons learned and benchmarking results that document how the business achieves excellence in its work. The most effective approach we've seen for managing focused knowledge is first to choose a specific business process or set of value-adding activities and then, through research and careful analysis, identify key success factors and required elements. Managers can then apply these lessons to process improvement initiatives that may include process redesign or even organizational restructuring. Building focused competency requires analysis and learn-



damental part of business life, especially among peers and within a mentoring relationship. We are seeing many successful efforts to formally support these exchanges, most typically by using part of the existing IT infrastructure, such as an intranet or Lotus Notes. For example, companies are gathering customer intelligence into a central repository, incorporating explanations of policies

keting and sales by developing an intranet repository in which to store intellectual capital about prospective customers. The repository includes such things as key contact information, news reports on prospects' businesses, and sales rep presentations and meeting notes. This allows sales representatives throughout the company to learn quickly the status of all sales activity with a prospect before

Year 2000, a.k.a. The Immovable

Deadline. It could cost millions

in man-hours and lost revenues.

Unless you have EMC Enterprise

Storage.[™] Because EMC Enterprise

Storage helps you become Year

2000 compliant without pro-

tracted business interruptions.

Our solutions can maintain com-

pletely separate production and

test data simultaneously. This will

allow you to validate your Year

2000 solution with real informa-

tion, without putting your busi-

ness at risk. To find out how

EMC Enterprise Storage can

help solve the biggest IT

crisis ever and upgrade the per-

formance of your entire system

***Not Without
EMC Enterprise
Storage
You Won't.***

during and after the project, visit

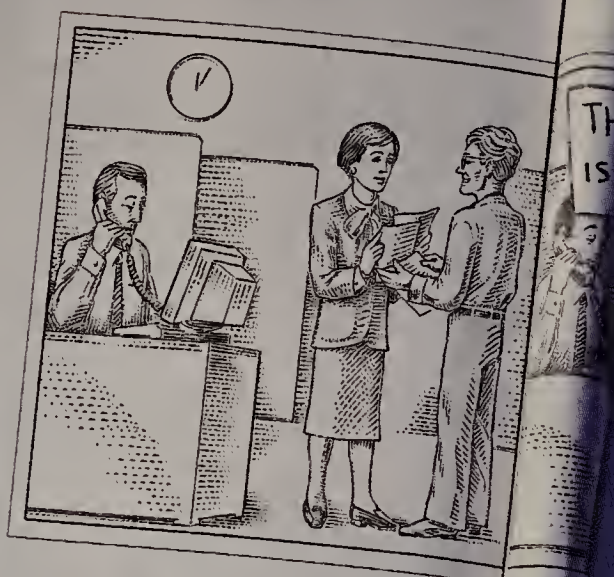
our Web site at www.emc.com or

call 1-800-424-EMC2, ext. 372.

EMC²

The Enterprise Storage Company

60 January 1997



Will You Survive Year 2000?

Can your company become Year 2000-compliant in time?
If you take a triage approach, you can do it—at a price.

Lori Valigra

Client/Server Computing, January 1997

Intellectual Capitalism

ing and thus requires a greater investment of time and other resources than does structured sharing.

Schlumberger's intranet exemplifies building focused competency. A decentralized corporation with \$9 billion in revenues and more than 60,000 employees around the world, Schlumberger manufactures testing and measurement equipment and provides oil field services that often require substantial engineering and technical support in the world's most remote corners. SINet, the company's worldwide corporate network, provides both an infrastructure for its technical and business applications and a repository in which its experienced engineers and technicians can store intellectual capital. Beyond just amassing volumes of information on SINet, Schlumberger manages to deliver highly valuable knowledge to employees and customers in real-time. A small, focused corporate group, supported by a network partner and an eager engineering/technical community, is responsible for sifting through the intellectual capital (which includes research papers, engineering reports and seismic data) on SINet and adding value to it through analysis, synthesis and documentation. Schlumberger recognizes that building focused competency requires active differentiation between information with clear business value and random intellectual capital that may lose its relevance over time.

Building Strategic Competency

Strategic competencies refer to that select set of critical IC that a company regards as vital to obtaining or preserving competitive advantage over its rivals. Although the best business strategies build on a company's core competencies, changes in technology, shifts in labor markets or other factors can require a company to develop new capabilities or dramatically improve existing ones. Focused research and other investigations into narrowly defined processes or business issues can be costly and time-consuming. Investments in building strategic competency therefore require

the strong sponsorship of senior management to sustain the commitment of time and resources necessary to develop such key business knowledge.

Fidelity Investments provides a good example of building strategic competency. In 1996, Fidelity executives launched an effort to research leading practices for managing large, geographically disbursed systems development efforts that must satisfy multiple sponsors. After studying a variety of practices from other companies as well as those within Fidelity, they identified nine major lessons learned. To better capitalize on these lessons (and more than 200 pages of supporting research), the com-

Successful IS organizations must develop a systematic methodology to measure the real costs and benefits of technology.

pany developed a plan to package and deploy the knowledge gained from its investment. An important part of the plan was to segment the target audience into distinct interest groups, such as business unit presidents, senior IT executives and project managers. The lessons learned were codified and relevant content packaged for each recipient category using style and language tailored to each group. Fidelity also developed a process to continue collecting project experiences and to refine the knowledge base.

The intensive knowledge-gathering activities conducted over six months represented a significant long-term investment in improving a critical strategic competency for Fidelity. Unlike general knowledge, strategic knowledge is not readily transferable through a database or even a quick informal conversation. In part, strategic knowledge is valuable precisely because it is difficult to obtain and deploy; after all, if it were easily available, on what basis could that knowledge lead to competitive advantage? And unlike focused knowledge, strategic knowledge often encompasses organization-specific factors that make it valuable to a given company's circum-

stances rather than being generally applicable. Such customization of knowledge requires the greatest level of investment.

Getting Started

Each of these sets of IC management investments—structured sharing, building focused competence and building strategic competence—requires different amounts of resources, time, management commitment and technology infrastructure. All are important areas for investment, but we advise executives to focus on the kind of investments that will best meet their most pressing business needs. One or two quick-hit, well-regarded successes can help breed a knowledge-sharing culture that values applying intellectual capital as a vital part of doing business. Over time, most companies will likely find it useful to take a portfolio approach that includes a few initiatives for each category of IC.

In all aspects of business today, corporate success comes from being able to acquire, package and distribute knowledge more effectively and with greater speed than the competition. Professionals in all disciplines need to learn more effective ways of carrying out their traditional functions as well as identifying new ways to add value. While many executives and managers express frustration at the availability of relevant, high-quality content that provides ideas for action, a growing number of companies have begun developing their capabilities to create and manage intellectual capital assets. The experience of world-class organizations clearly demonstrates that acquiring, packaging and leveraging ideas that cut costs, increase speed and deliver customer value can help a company achieve superior performance. **CIO**

Richard W. Swanborg Jr., president of ICEx and a faculty member at Boston University's School of Management, can be reached at swanborg@icex.com. Paul S. Myers, managing principal at ICEx and editor of the anthology Knowledge Management and Organizational Design (Butterworth-Heinemann, 1996), can be reached at myers@icex.com.

EXERCISING ALL YOUR MIPS?

Millennium does.

Many mainframe purchases are based on Total MIPS — but Productive MIPS are the real test of value.

Consider the Amdahl Millennium™ family of CMOS-based servers — S/390® compatible mainframes that deliver more Productive MIPS per dollar than any other CMOS-based server. Bar none.

Millennium's extraordinary value derives from its uniquely muscular architecture. Unmatched caching with up to 30 times more capacity for optimum processor utilization. Flexible partitioning for load-matched resource allocation.

Plus many more innovations to keep MIPS hard at work on the mission-critical workloads of your business.

Interested in servers with a stronger work ethic?

Talk to Amdahl.



MILLENNIUM

Call for free white paper on
Performance vs. Capacity.
Contact us at (800) 223-2213
or www.amdahl.com

amdahl

amdahl

BRING US YOUR HARD PROBLEMS™

© 1997 Amdahl Corporation. Amdahl, the Amdahl logo, and Millennium are trademarks of Amdahl Corporation. S/390 and CMOS are trademarks of International Business Machines Corporation. All other trademarks and trade names are the property of their respective owners.

The Power of Cooperative Thinking

*Effective leadership is no longer a solo activity.
Teams can dramatically improve performance at all levels—
even at the top.*

At the Table:

Matthew W. Emmens,
(bottom left) president and
CEO, Astra Merck Inc.

Rob Cohen, (bottom right)
vice president of
information technology and
capabilities and CIO, Astra
Merck Inc.

Hal F. Rosenbluth, (top left)
president and CEO,
Rosenbluth International Inc.

Dean Sivley, (top right) vice
president of marketing and
CIO, Rosenbluth
International Inc.

*This CEO/CIO roundtable
discussion on strategic IT
leadership was also
presented as a live general
session at the CIO
Perspectives Conference
held Oct. 12-15 in Naples,
Fla. Excerpts, including Real
Audio segments, can be
found on our Web site,
www.cio.com.*





WHEN PEOPLE TALK ABOUT STRATEGIC TECHNOLOGY

leadership, you'll often hear the word alignment bandied about. Indeed, making sure your business and technology strategies are in sync is not a bad idea. But if Astra Merck and Rosenbluth International are any indication, the alignment concept is limited and even becoming outmoded in fast-moving organizations today.

At these companies, the business leaders understand technology, the technology leaders understand the business, and together, the two plot the company's goals and figure out how to reach them.

In this inaugural issue of *CIO Enterprise*, we bring together two

leading CEO/CIO pairs to talk about life and leadership in successful information-driven organizations.

Rosenbluth International Inc. is a 105-year-old family-owned travel-services business that increasingly depends on information technology (IT) to provide customers with better, more cost-effective travel information anywhere in the world. Recognized for its intelligent use of the Web, Rosenbluth won a Web-Master 50/50 award this year. Its most pressing competitive challenge right now is the consolidation and globalization taking place in the travel services industry. President and CEO Hal Rosenbluth intends to prevail in this shifting market with a staff of 4,400 employees who are committed, empowered and "part of the family." Dean Sivley, who oversees both IT and marketing, is a valued member of the executive staff and a good friend of the CEO. Rosenbluth wouldn't have it any other way.

Astra Merck Inc. is a joint venture between Swedish pharmaceutical maker Astra AB and U.S. giant Merck & Co. Inc. The Wayne, Pa.-based company was formed in 1991 (it became a stand-alone entity in '94) to bring together Astra's research capability and Merck's strength in drug development and knowledge of the U.S. market. A small group of founding executives developed a vision and strategic plan for the company, built all the business processes, put in the supporting technology, identified what the organization should look like and what kind of culture it should have, and only then brought people on board. Astra Merck's two primary goals are to develop customer-focused products and services (customers include patients, physicians and HMOs) and decrease time to market.

PHOTOGRAPHY BY KATHERINE LAMBERT

ROUNDTABLE ON I.T. LEADERSHIP

Like Rosenbluth's Sivley, Rob Cohen has a dual role. In addition to being Astra Merck's CIO, he is vice president of capabilities—a very broad organizational role indeed. President and CEO Matthew Emmens says Cohen "thinks in terms of the business and in terms of the process." Having him oversee the company's capabilities holistically serves Astra Merck's goal of decreasing time to market. And with some drug patents worth up to a million dollars a day toward the end of their life cycles, that's a goal well worth pursuing.

Rosenbluth, Sivley, Emmens and Cohen spoke with *CIO* Editor in Chief Abbie Lundberg at Rosenbluth headquarters in Philadelphia.

"I don't waste a heck of a lot of time coming up with a direction only to find out it's not plausible. Dean will let me know right off the bat."

—Hal Rosenbluth



CIO: In a company where information is so central to the business, how important is it that people from various disciplines—customer service, research, marketing—really understand technology and its potential, and how does that play into IT decision making?

Sivley: [At Rosenbluth,] even if you're working in industry relations or the marketing group, you're expected to have a level of knowledge about IT. The people we've hired over the last five to seven years definitely have had that. It makes it much easier to work with the technology group, to know what's possible from your own disciplines and also to understand what the technology people are talking about when they're asking you questions or figuring out who is going to do something.

Cohen: At Astra Merck, it's not really a separate activity. It has become a natural [part of the process] as people think about how to have their business area function more effectively. They're not only thinking from a process perspective but also taking advantage of tech-

nology, and there are people from IT sitting side by side with them in a team.

Rosenbluth: Dean is part of our five-member officer group. Every major strategic decision involves him and therefore IT and marketing since both report to Dean. Very rarely does anything go on in the company where Dean and his group are not a part of the formulation and the direction.

CIO: Matt, what are your expectations for the CIO?

Emmens: What I really look for is someone who understands our business and is a contributor at the business level—

and, of course, I think it's absolutely key that he reports to the CEO, not the CFO. One of the things that people in IT do—which often people in marketing, sales or drug develop-

ment don't—is think in terms of process and how the information is going to flow. Rob thinks in terms of the business, but at the same time, he's thinking in terms of the process. He's often the one who brings up to me and to the group the things that are going to bump into each other as we go along.

CIO: Hal, what do you want most from Dean?

Rosenbluth: I really want Dean to help us accomplish our goals as a company. [He can do this more easily because] he's an integral part of setting those goals. I have faith in him to quickly ascertain whether we can do something [technologically] or not; I don't waste a heck of a lot of time coming up with a direction only to find out it's not plausible. Dean will let me know right off the bat.

Emmens: One thing that I expect from Rob is to keep me out of trouble. You can go technically way out on the edge and make a lot of mistakes, or you can be way behind the curve and be out of date, and I don't know where that is. So

we throw ideas back and forth, and he'll say, "No, we don't need to do that yet."

CIO: It sounds like you all work pretty closely together on an ongoing basis. How often do you meet?

Rosenbluth: Physically, probably every couple of days, but we [also] communicate by e-mail daily, over the phone when it's appropriate, voice mail, fax. Probably a day doesn't go by that I'm not either communicating with Dean or anticipating what's going on in his head. We're a company built on friendship. Many of us are such good friends that we don't need to talk to each other to know what's going on. But if we're both at headquarters at the same time, then we see each other throughout the day for one reason or another.

Sivley: People in my group enjoy the respect [of others in the company] partly because they see that Hal very much respects me and considers me a key contributor. More interesting than when we meet is how we meet. For instance, we may have our meeting going jogging together. Or we play basketball, or we play tennis, so they also see that not only do we work together and respect each other, but we also like each other.

Emmens: Rob and I are on e-mail and voice mail constantly. We probably see each other once a week, and it's often not an IT issue; it's often on business. Rob's currently working on redefining the roles for our management staff group—my direct reports. The fact that I give him non-IT assignments [shows] the other members of the management staff that I respect his business judgment and his ability to communicate with each person and that they should respect him as a business person and not as some computer head.

CIO: Let me ask the CIOs, what do you need from the CEO to do your job well?

Sivley: Hal is very much an early adopter—he loves technology. He reads a lot, he tries a lot; this makes it very easy for me to explain things to him and to have good discussions. Also, because he has learned technol-

"Because Hal has learned technology, he relates his vision well to things that are possible with technology."

—Dean Sivley



ogy, he relates his vision well to things that are possible with technology. So that's one attribute, along with having his respect and keeping me informed.

Cohen: It's important for the CEO to be supportive and understand the value of investing in the technology. Otherwise, you'd be fighting an uphill battle all the time. If I see the value but the CEO does not, then there's a problem.

CIO: What's the worst thing CEOs can do in terms of managing IT?

Cohen: I went to a conference of CIOs, and one of the CIOs had brought along his CEO to make a presentation. The CEO was talking about what he was proud of that the CIO had accomplished, and it was how the CIO had reduced the IT budget—nothing to do with anything that was helping out in the business. Certainly it's important to be efficient, to manage the spending, but for that to be the entire focus is a lose-lose situation.

CIO: How can the CIO help educate someone who has that perspective?

Cohen: It does put the CIO in a very difficult position, and all you can do is try to communicate, whether it's talking about what competitors are doing and how that's providing them with a business advantage or convincing others in the business who have strong credibility with the CEO why it's beneficial. If you have credibility, you can drive home the business value, and that's what you have to keep communicating and emphasizing.

CIO: Empowerment has become something of a fad, but both of your companies seem to make good use of it. What do you do to empower employees to make decisions—and what does that

do for your business that makes it worth the effort?

Rosenbluth: When people feel they're involved and that they can help determine

the destiny of not only the company but themselves, they tend to focus on doing the right thing. Too many times in business when people think the decisions are being made for them, they will quickly cop an attitude of, "Why should I care?" and then a company is in big trouble. Without empowering people, you're basically saying that their minds are useless.

Emmens: People want to feel important, and they want to feel supported. I like to think of it as, each day, those people choose to come to work. They don't feel trapped; they don't feel like they're under some tremendous burden. They've chosen—out of all the things they can do that day—to come work for you because they like the people they work with, and the work they do is important, and they get to make choices in their work as well as where they work. And that's been powerful for us.

As an employer, this is competitive. You can look at turnover rates—ours is half that of the industry [average]. We just ran an ad in 50-plus newspapers. We were going to hire around 800 people. We planned to run the ad for two weeks, and we ran it the first week and got 30,000 applications in a market that is hiring like crazy. In the pharmaceutical industry, everybody knows every other company, and they know your culture. And they know that ours was built on some of the values that Hal's talking about.

CIO: How has that played out in your IT organizations?

Cohen: The fact that the folks within IT are empowered to make decisions has really helped internal customer service, let alone outside customer service. It makes people much more enthusiastic and excited about what they're doing. It also frees me to be empowered in a different way and to pay more attention to the bigger picture of the business than if I [were] involved in all the decision making.

Sivley: In all businesses, everybody has to do more now than we did five years ago. Teams are the only way to make that happen. Now, when I'm traveling, it doesn't stop decisions from being reached, and it allows me to get out to customers more.

When teams come to you, they're coming with a recommended solution. They're not asking you to make the decision; they're asking if [their recommendation] makes sense to you. There are times when we will come to different conclusions, and we'll either go back and rethink, or we might disagree and then have a much better discussion.

Cohen: In a way, the team uses you almost as another member of the team because you have a certain set of experiences and input that no one else on the team has.

"If the team believes something is bad, you're going to hear about that. In a hierarchical organization, the chances of hearing bad things go down remarkably the higher up you get in the organization."

—Matthew Emmens

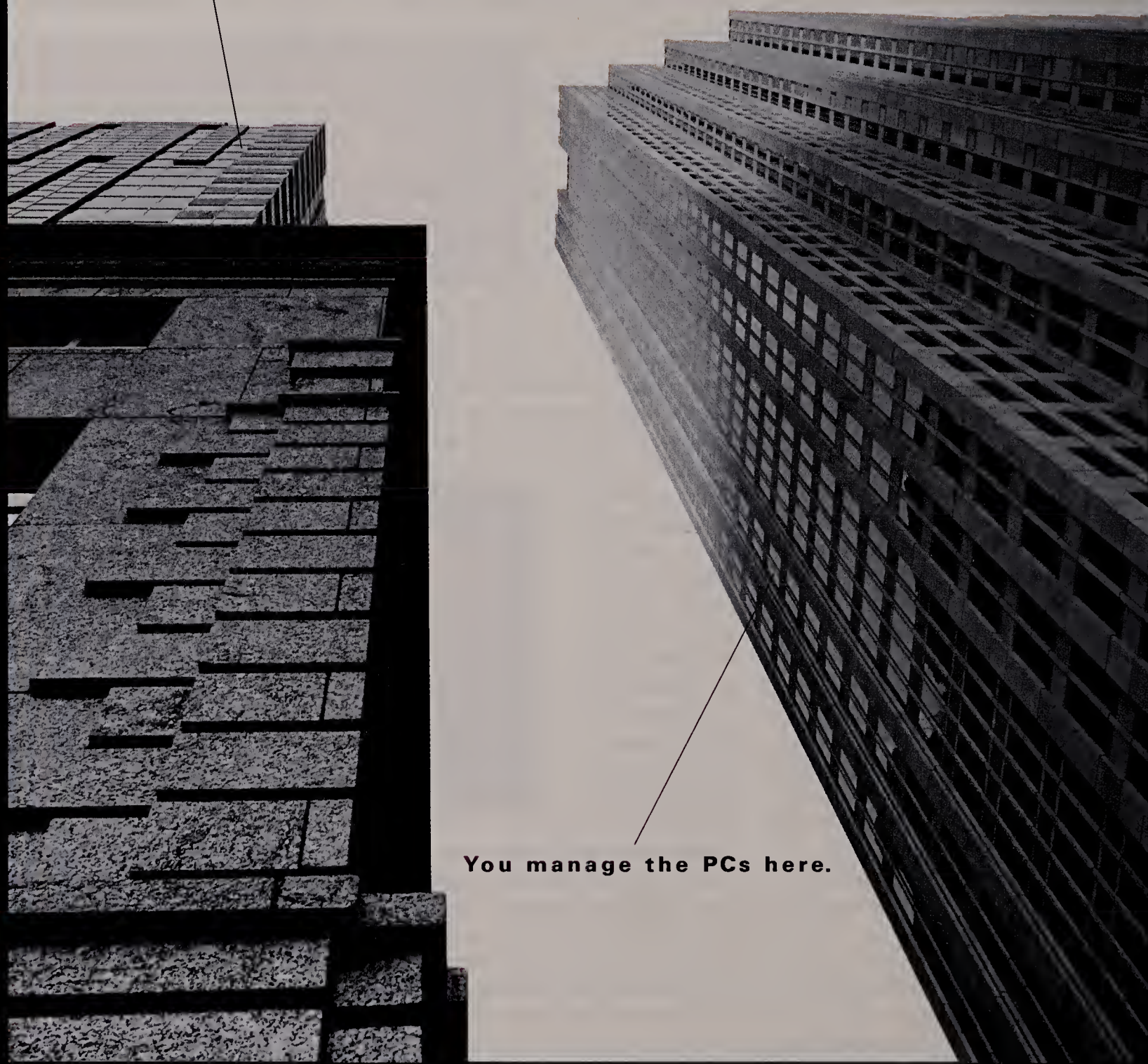


CIO: In an environment where you're not making all the decisions, do you ever feel that you're not doing your job?

Cohen: In all candor, you do think about that from time to time—you know, "Gee, should I actually be more involved in this particular thing? Am I abdicating something?" I think about whether I'm positioning myself cor-

You sit here.

You manage the PCs here.





HP Vectra VE
for Business FROM \$992[†]

Next time you're thinking about choosing
a business PC, consider: instead of running
around and locating each and every
PC in your network, you can save your

breath by using the HP Vectra V and X Series PCs. Our
Intel® Pentium® processor-based PCs are designed not
just to be manageable, but to actually help you manage.

Between our hardware and software features like
TopTOOLS and OpenView, we offer a host of non-

proprietary, DMI-standards-based management



solutions. You can remotely monitor and upgrade the BIOS
of multiple PCs throughout your entire network,* collect
asset data from them, troubleshoot problems before they
even become problems and, in general, get more work done.

Have a seat and please type: www.hp.com/go/vectracommercial

Better products, better productivity.



ROUNDTABLE ON I.T. LEADERSHIP

rectly in the decision-making process.

CIO: How do you balance that?

Cohen: Just being conscious of it, wrestling with the issues and talking to other people. The people who work with me will ask if they're involving me enough, and I'll ask if I'm getting involved at the right level.

Emmens: You learn to become a communicator, an integrator and a directional person who is espousing the same thing so that everyone understands the bigger picture. The team can't see the whole organization, so you become a link to saying, "Here's what we're all doing together, and here's why it's important." It helps them prioritize, so they see how the projects fit in and how their particular role fits in. [In my previous position as] vice president, my model was Merck, where [an executive's job is to] sign off on anything over \$1,000 and get presentations every day for two reasons: to understand what's going on in order to review and approve and to evaluate the person standing in front of you for the next promotion. Here, it doesn't

unity, support and teamwork [or TRUST]. That's worked fairly well for us, although it's an ongoing process to get better and better. The team environment forces people to work well together, or they won't be part of that team; the team does not put up with an underperformer.

One thing I like about teams is you don't get a party line. The teams themselves really have power, and you get told the truth. If the team believes something is bad, you're going to hear about that, whereas in a hierarchical organization, the chances of hearing bad things go down remarkably the higher up you get in the organization.... Even another level down at Merck, I didn't hear about problems. Everything was great, until you went to a bar with somebody late at night, and they've had 312 beers, and they say, "You're going to hear it now!"

CIO: So how do you hear things?

Emmens: I walk around. People are more willing to say things to you in our organization because it's flat. One of the most important things is learning to listen without judgment. Because

you don't need to judge, all you need to do is listen and have logic. And if you listen long enough, they'll either make a decision or you'll get some more information and the decision will be made.

I was taught you should always know the

answer, but you don't always know the answer. We have hundreds of teams doing hundreds of thousands of things. You don't know what's really going on, so if a problem pops up, sometimes you can just get that to the right people, and that's your job. Before it would be, "No." It might be the dumbest decision ever made in the company, but it was clear.

Sometimes people will try to short-

circuit the teams. There are one or two individuals who see fit to march into your office, and you've got to push back. There's a part of you that says, "I grew up in 20 years of business; it's my job to do something." But another part of you says, "No, this is a different kind of organization."

Cohen: Another way of looking at it is that in almost every facet of what I'm responsible for, there are people working with me or for me who are more knowledgeable and more expert at it than I am. So why would I be the one to make a particular technology decision when there's somebody or some team who knows more about it than I do?

CIO: How do the people reporting to you feel about the fact that you don't have all the answers?

Cohen: They like the fact that they get to be part of developing the answers. I think people may be looking more to leaders to help establish the culture, to help establish a vision, key things you want to focus on. So leaders still have a very important role in terms of providing the context for others to work in and giving some guidance, but that's different from being down into the details and deciding the issues that all these other people are very expert at.

CIO: Hal, what's most important for you as leader of the company?

Rosenbluth: I'm the chief executive officer in charge of sleep. Honestly, I think it's important for me to provide an environment that is conducive for people to get a good night's sleep. That means we need to have an honest company, a company where people are free to say whatever they'd like, and a company that never compromises its clients, people or suppliers. [If you can do this,] people will get a good night's sleep, which is conducive to coming back to work the next day and being productive. **CIO**

Editor in Chief Abbie Lundberg can be reached at lundberg@cio.com.

"Leaders still have a very important role in terms of providing the context for others to work in and giving some guidance, but that's different from being down into the details and deciding the issues that all these other people are very expert at."

—Rob Cohen



work that way at all; in fact, the teams are really doing most of the evaluation.

CIO: Do the teams have explicit guidelines for how they should function?

Emmens: The teams don't have official rules, but they have a charter. They know they're supposed to make decisions based on truth, responsibility,

A CIO's job expectancy is about 3 years. Here's how to make yours last a lot longer.



Budget overruns. Missed deadlines. Undelivered functionality. Complete project failures. Too many important development projects face these career-limiting fates. The cause—out of control development processes.

The key to project success is implementing strong process management using Process Engineer® from LBMS.

Process Engineer provides a clear path for planning, developing and implementing all of your projects, from application development through package implementation. Start by tapping into libraries of proven best practice processes for even the most complex development tasks. Customize these to meet the exact needs of your organization.

Maintain control throughout the development process with hands-on communications, reporting and management tools that deliver both high-level views and detailed status of all your projects. So you can identify and solve small issues before they turn into big problems.

LBMS is the undisputed leader in process management. We've helped CIOs plan, forecast and deliver thousands of projects. On time. Within budget. With success. And project success means your success.

LBMS Process Engineer—it's job security.
For more information on Process Engineer, call 1-800-345-5267, or visit us on the Web today.





the

PC Price Tag

Reader ROI

This feature will help readers understand how much PCs cost to own and how using measurement models can reduce that expense.

The bad news is desktop costs keep rising. The good news is a spending model called TCO can help control them. BY CAROL HILDEBRAND

FOR SUCH AN INNOCUOUS BIT OF corporate scenery, PCs can generate surprising controversy

when it comes to figuring out how much they cost. Ask the head of marketing, and he might check his purchase order and toss the sticker price at you. Ask the CIO, and he might add a few grand to the purchase price to account for technical and help desk support. Ask a user, and she might point out that the biggest cost is the time she wastes cajoling it to do what she wants. But here's the scary part: The

only thing business executives know for sure is the price keeps going up.

"The fear a lot of CFOs have is that information technology [IT] costs are growing out of control without anybody being aware of them," says Bill Kirwin, vice president and research director with Gartner Group Inc.'s management technology group.

One thing's for sure: Pinning down the cost of desktop technology in the corporation is difficult. As financial and information executives wrestle with the issue, many are turning to an analytical tool called total cost

of ownership (TCO). Put simply, TCO is a formula for calculating the cost of owning and operating a PC. Although that figure starts with the sticker price on the hardware, it can also include items such as technical support and maintenance, software upgrades, help desk and peer support. By identifying where technology costs are throughout a company using a TCO model, business executives can reduce them.

IT'S NOT HARD TO UNDERSTAND the allure of using a TCO model to reduce IT costs. When Stamford, Conn.-based Gartner Group published its original TCO study in 1987, the five-year total cost of ownership was \$19,296 for a DOS-based PC. By 1996, the five-year TCO had risen to \$44,250—a 129 percent increase.

Interestingly, the actual price of the technology is only a small percentage of the TCO. Kirwin says rising costs are driven largely by today's distributed computing model, which has a decentralized purchasing pattern.

Such a pattern makes setting stan-

dards and using economies of scale difficult. And when business groups buy and use disparate technologies, information systems (IS) groups face the expensive proposition of hiring skilled support personnel for a variety of systems. Moreover, IS must also find ways of patching together those technologies—also no cheap thrill.

James Hatch, vice president and CIO at Case Corp., a manufacturer of agricultural and construction equipment in Racine, Wis., says that IS is often handed the job of cleaning up the mess caused by distributed purchasing. "In that environment, you'd expect leaders to seek some economic model to bring order to some of the chaos."

However, defining TCO can also get a little chaotic, as different research groups create divergent cost counters. Gartner's TCO has been joined by Meta Group Inc.'s Real Cost of Ownership tool, while Giga Information Group Inc. uses a formula called Economic Value Add. Each model purports to better define technology costs, but the formulas differ. One might include "soft" costs, such as informal peer support, while another may insist on using only costs that can be strictly counted.

pointing out that as network-centric computing architectures mature, corporations naturally turn from the spending mode associated with the early growth phases of a technology. They begin to squeeze excess costs from a known quantity. As a quantitative model that focuses solely on costs, TCO works well when applied to such cost-reduction initiatives.

For example, Dennis Fishback, manager of IT and data processing at Virginia Power, says his group used a TCO model to justify two major cost reduction projects: a three-year, \$10 million systems management initiative and a three-year, \$30 million asset management project. Virginia Power used TCO to compare the cost of the current IT setup with the projected reductions from the two projects, both of which are aimed at managing it more effectively, Fishback says.

He adds that managers bought into both projects when they saw the projected cost savings. Fishback says Virginia Power will save about \$15 million per year on the systems management project and \$9 million per year on the asset management plan.

The systems management project will save money through more efficient, centralized systems management—using things like electronic software distribution and automated backup, which reduce support requirements. The asset management program will centralize control of Virginia Power's inventory of desktop technology and reduce costs through such methods as PC leasing, standardization and software version control. The payback will come in a mixture of real dollar savings and avoided costs, Fishback says.

FOR MANY EXECUTIVES, VIRGINIA Power's projected cost savings might sound like 24 million good reasons to embrace TCO models wholeheartedly. But TCO is not a perfect solution.

Executives—both IS and financial—who wish to put this tool to work must first figure out what it can and can't do. Although TCO analysis is one valuable tool to help keep IT costs under control, no total cost of ownership model can determine how to use IT wisely

Counting Lessons

How to set up your own ownership model

BILL KIRWIN, ONE OF GARTNER Group Inc.'s total cost of ownership (TCO) chief architects, offers a few tips to help companies build their own models:

You know more than you think you do. Most companies keep track of who attended what training classes, or how many phone calls the help desk is answering and even how much they're paying for hardware and software. Unless a company is totally disorganized, it's usually a matter of just gathering information that's lying around.

Analyzing TCO doesn't have to be a monumental undertaking. Two people working for about a month should be able to pull together enough information to identify cost saving opportunities.

Check your assumptions through interviews. "Ask managers and end users what they do when they have problems," says Kirwin. For example, do they holler over to Sally in the next cube, or do they call the help desk?

—C. Hildebrand

GARTNER'S MODEL is accepted as the de facto standard. The consultancy uses an analytical model divided into four different categories: capital costs, administrative costs, technical support and end-user operations. Each category is then sorted into discrete cost items. Gartner gathers its numbers from research and conversations with client corporations.

Most experts agree that TCO models fulfill an important need. "TCO is necessary to understand where the costs are," says Rick Smith, a New York City-based partner with Giga Information Group based in Cambridge, Mass. Kirwin agrees,

Now PeopleSoft® runs on your AS/400e™ series.

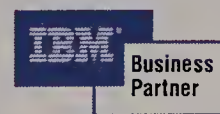
Few combinations elicit such an enthusiastic response.



AS/400e series

Mention to your staff that PeopleSoft now runs on the new IBM AS/400e series and their mood is certain to improve. This powerful combination of business application software and heavy-duty 64-bit RISC AS/400 processor will perform wonders. PeopleSoft offers unparalleled enterprise-ready applications for managing finance, distribution, manufacturing and human resources. And they're all Year 2000 compliant. So, give us a call to learn how this cool new combo can help make your business more productive.

For a special white paper, call 1 888 773-8277. Or visit the PeopleSoft Web site at www.peoplesoft.com



MEASURING I.T. COSTS

throughout the enterprise. TCO analysis can go awry if not used in balance with other financial analysis models, and experts are quick to point out its limitations.

Knowing TCO's Limits

1. TCO doesn't measure benefits or value.

"The problem with TCO is that there is no talk about revenue," says Giga's Smith. "It doesn't talk about the business value and contribution [of IT], and the key to any big IT project is the revenue and profit contribution—will it generate profit?"

Jay B. Pieper, vice president of corporate development and treasury affairs at Partners HealthCare System Inc. in Boston, says he's not an avid proponent of total cost analysis. IT purchases are influenced by financial considerations, but most major investments are made based on business value to a company's operations, he says. "A lot of [business people's] wants aren't going to center around the ROI," he says. "It's going to be a qualitative decision on whether this is a good system for them."

But companies should try to translate the less-quantifiable aspects of value into dollars, says David Cearley, senior vice president and director of the work-group computing strategy service at Meta Group in Stamford, Conn. The numbers may still be a forecast, but a forecast is better than complete uncertainty. Cearley gives the example of Hewlett-Packard Co., which did a TCO analysis on a sales-force automation project. The company defined the project benefits as the salesperson's ability to make a certain number of extra sales calls a day, which over time would translate into increased sales volume.

Case's Hatch says that while his group does a cost analysis of all IT projects under consideration, the business units must also analyze the business benefits. "If IS did the benefit analysis, clients wouldn't take ownership of the resulting system," he says. "They need to own and commit to the system."

2. TCO cost reductions don't always translate into real money. If the IS organization announces that it is going to save, say, \$5 million through a TCO reduction, business executives might reasonably expect to see that translated to

the bottom line of their IT budgets. Unfortunately, TCO, like many accounting models, doesn't always deal in "real" money. Take, for example, the concept of the "futz factor," or the amount of time PC users waste with unproductive computer work such as getting a printer driver to work or loading new fonts to spruce up a presentation. IS could add support staff to lower the cost of the futz factor. But that move won't return real money, explains Cearley. "Say you made a change that lowered that cost from \$5,000 per user per year to \$4,000 per user. People assume that's going to be real savings, but you can't find those savings anywhere on real budgets in cost figures."

It's the classic economist-versus-accountant debate: "Economists are talking real money, not book deprecia-

run 100 PCs. Some people would say their TCO is \$10,000 per PC. But does that mean that if I got one more PC, my costs would be \$1 million, 10 thousand? No, because some of those costs don't necessarily go up just because you got one more PC." It's the money actually spent, or the marginal cost, that interests Hubbard. "That's the relevant quantity for a decision maker because that's real money."

3. The "exact" factor: How can these numbers be so precise? "What makes me suspicious is that TCO is always reported as exact numbers or small ranges, and it's reported as a number without context," says Hubbard. He questions how companies arrive at such precise numbers. For example, how do CIOs arrive at the cost of peer support per user? In many cases, they guess.

"I've seen studies by end users that are 50 pages of charts and tables. But even with all that data, assumptions galore are being made," says Greg Blatnik, a vice president at Zona Research Inc. in Redwood City, Calif.

Hubbard recommends that rather than assign an exact number to an area of TCO—help desk support costs, for example—companies should represent TCO numbers in terms of probability distributions. Probability distribution is a statistics term that states a probability that a value is between two quantities. (A bell curve is one example of a probability distribution.) Companies can then calculate confidence intervals for TCO numbers, which basically pair a range of numbers with a confidence rating. So a company could be 99 percent confident that its desktop TCO is between \$5,000 and \$15,000, but it could also be 89 percent confident that the cost is between \$6,000 and \$10,000.

"TCO models need to be customized to fit each firm, and they need to be reported as a range because that's a better representation," he says.

Gartner's Kirwin agrees. "Our numbers were never meant to be precise," he says. "We're not trying to land a man on the moon with them. It's a way of getting people to think [about the cost of owning technology]." **CIO**

Senior Editor Carol Hildebrand can be reached at cjh@cio.com.

"We're not trying to land a man on the moon with these numbers. It's a way of getting people to think about the cost of owning technology."

—Bill Kirwin

tion," says Douglas Hubbard, director of applied information economics at DHS & Associates Inc., an information systems consultancy in Rosemont, Ill.

For example, "if someone calculated the TCO of a PC to be \$45,000, they probably don't mean that if you bought one more PC you'd spend \$45,000," he explains. "You'd spend maybe \$5,000 to \$10,000 and then allocate your fixed costs to that PC as well. There are some costs associated with owning a PC that don't necessarily go up when you purchase one more."

Hubbard says he prefers to use a standard economic concept called marginal cost. Marginal cost is how much more you would actually spend if you were to acquire one more PC. So, he explains, "suppose it costs \$1 million a year to

Hyperion Software.

The freedom to say "Yes," the control to say "How."

*Hyperion provides
the independence to use
information freely—
without compromising
existing systems and
standards.*

As an IT professional, maintaining the integrity of your company's information infrastructure is your top priority. It's a priority that must take into account the needs of managers to access and use information freely, independently and to their best advantage. And in these terms, the best advantage you can give them is Hyperion.

Our comprehensive financial management solutions easily integrate into your infrastructure. End users get the information tools, business intelligence and freedom they need to listen to their business, and to understand what they hear. In fact, more than half of Fortune 500 companies are listening and hearing more clearly with Hyperion, right now.

To find out how, call us at 1-800-286-8000. Or visit our web site at www.hyperion.com.



Listen to your business.

IN THE NEXT FEW
YEARS, TV, CABLE,
THE PHONE SYSTEM
AND THE INTERNET
WILL ALL BECOME ONE.

WILL YOU KNOW
HOW TO PLAY?

They certainly will. They'll be as comfortable in front of a computer workstation as you are in front of a TV set. Only they'll get a lot more out of it. It'll be their fax, their phone, their interactive television, their library, their secretary, their teacher, their partner. Not to mention their on-camera, on-line, interoffice meeting place.

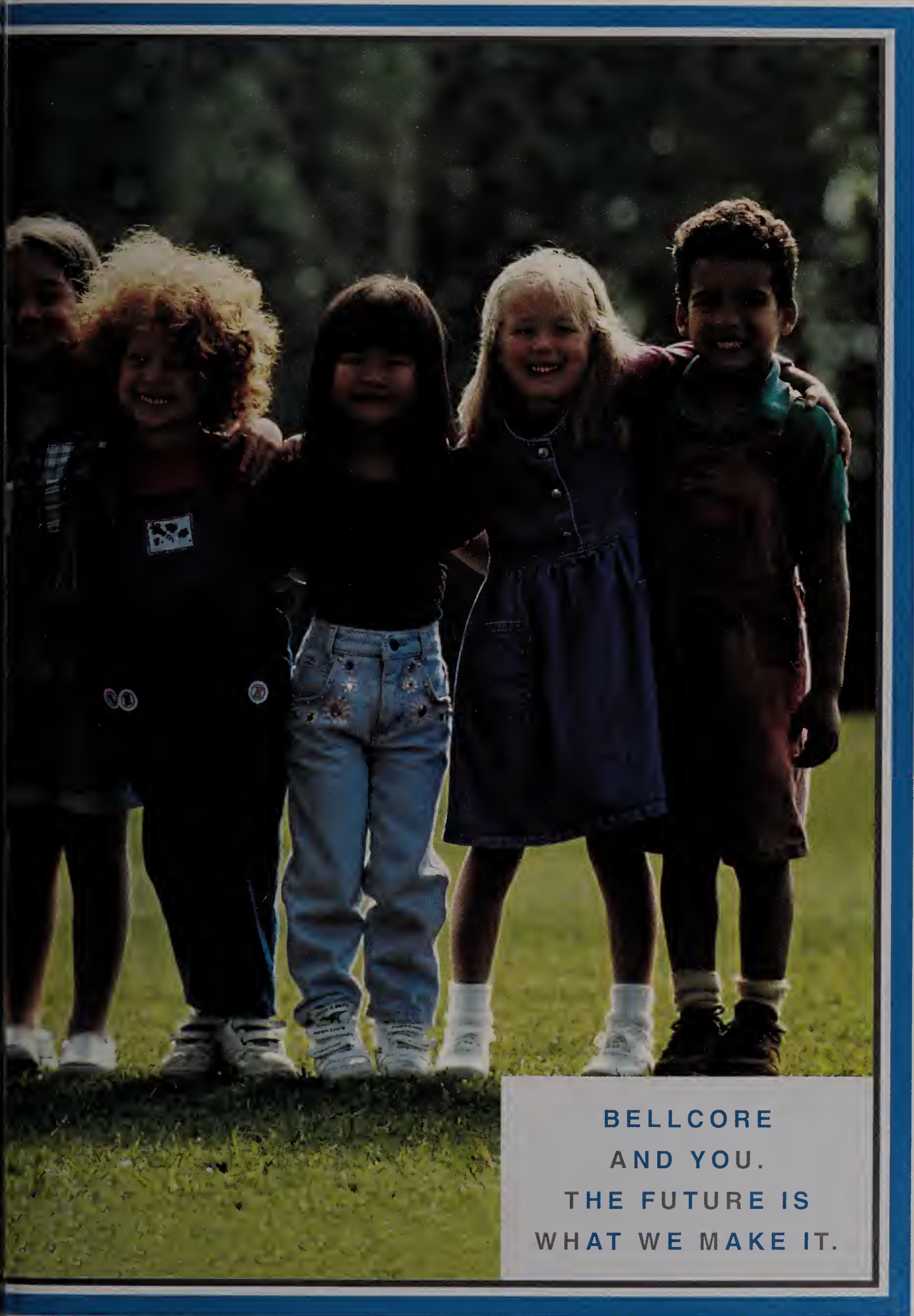
It's the way society will operate; it's the way companies will network; it's the way business will grow.

*Let's get ready for it. We're Bellcore.
The people who've already built the foundation for the world's most sophisticated Telecom network. And who've been living and breathing the future of business networking ever since. Let's talk. Let's plan. Let's make sure that when somebody says, tag, you're it you'll be ready to play and win.*

1-800-521-CORE (U.S. & CANADA)
<http://www.bellcore.com>

Bellcore





BELLCORE
AND YOU.
THE FUTURE IS
WHAT WE MAKE IT.

the Elusive muse

Ways to build an innovative environment and lure creative people into joining it **BY JENNIFER BRESNAHAN**

SOMEWHERE IN CORPORATE AMERICA, A ROOMFUL OF EXECUTIVES are competing to create the zaniest foam hats; a CEO is wishing she were anywhere but walking across a rope bridge as part of a team bonding retreat; and a CFO is shelling out money to redesign office space with cozy nooks for beanbag chairs and no doors—all in the name of inspiring to innovation.

Creative thinking is the Holy Grail of large and small companies alike. Most companies cannot survive without ideas for improving existing products or developing new ones. Yet, as important as innovation is, no one has figured out a foolproof method for making it continually flourish in an organization. "I've seen methods ranging from silliness to deep structure," says Larry Prusak, managing principal of knowledge management at IBM Corp.'s Consulting Group in Boston. "People try all sorts of things, but no one has cracked the code."

One thing's for sure, institutionalizing creativity takes a lot of work. Like a reluctant lover, innovation must be courted, romanced even. A company must prove its honorable intentions by slaying the dragon of bureaucracy. It must go beyond mushy, mission-statement love poems to show true commitment. After all, the most creative employees in the world with unlimited financial resources behind them are useless if they don't feel comfortable taking risks; employees know whether breaking from the status quo brings reward or punishment. Companies must become obsessive suitors. The wooing of innovation must permeate every company policy and every executive's spoken word. Some companies are better at developing innovation-friendly cultures and systems than others. Here's how:

Reader ROI

Developing a culture that fosters innovation is no easy matter. This article explores how some of the world's most innovative companies inspire their employees to creative heights.

PHOTO BY JOHN RAE



Sony's flat hierarchy encourages the kind of innovation that produced the Walkman, says Kei Totsuka, head of product design for the U.S. division.



WOOF! Jake the dog's daily presence in the Open Market offices helps people relax and create, says owner Jim Baroody, an analyst with the company.

Flat as Far as the Eye Can See

INNOVATION JUST DOESN'T MIX with hierarchy, structure and closed doors. Sony Corp. keeps its culture open by giving all of its 200 global designers direct access to the CEO and other top executives at the Tokyo-based entertainment company and electronics manufacturer. Every two months, designers fly to headquarters to present new ideas for the exterior designs of Sony electronics equipment. Although \$50 billion Sony is eight times the size it was 15 years ago, the design department has remained small—Sony Corp. of America has only 40 designers—to allow this one-on-one interaction to continue. “This helps the designers’ morale,” says Kei Totsuka, who heads

the U.S. design center as vice president. “Creativity is a designer’s individual idea or inspiration. When an idea comes through a lot of layers, that kind of originality is lost.”

This policy has been a major factor in Sony’s success with such breakthrough features as noise reduction for the Walkman personal stereos and Trinitron color TVs, says Michael Silverstein, senior vice president in The Boston Consulting Group Inc.’s Chicago office. “What’s unique at Sony is that the people who run the company have an engineering view. [The process is more than] just receiving designs from designers. The CEO has a set of ideas that he’s thinking about, too.”

The same openness exists at 3-year-

old Open Market Inc., a \$22 million software company based in Cambridge, Mass. “We compete with the IBMs, Microsofts and Oracles of the world,” says the company’s co-founder and chairman, Shikhar Ghosh. “They always have more money, more market presence, more people than we have. As we get bigger, it’s hard to rely on our people necessarily being smarter. So we have to make sure that our work environment allows people to give their best in ways that companies that are much larger than us will find difficult to do.”

To that end, Open Market’s physical office space is configured with low-walled cubes that make collaboration easier; even Ghosh sits in a cube. Dogs and babies are welcome, and the attire is decidedly casual. Competitive Analyst Jim Baroody has brought Jake, his yellow Lab, to the office every day since he first joined Open Market two years ago. According to Baroody, Jake, who freely wanders the office all day, is a living antidote to creative block; employees search out Jake when they’re stressed, and after a few minutes of quality petting time, they’re usually refreshed and able to get back to work. “Jake helps creativity because he makes people become more relaxed, and in general, people are way more creative when they’re relaxed,” says Baroody.

“It’s hard to take yourself too seriously when a dog is sitting there licking your feet,” agrees Ghosh. “Does that foster creativity or change business decisions? It makes a marginal impact. On the other hand, when you see a dog walking around the office, you feel this is no IBM, and maybe you’re allowed to be yourself here.”

Dallas-based Texas Instruments Inc. (TI), best known for its semiconductors and calculators, has a formal and elaborate structure to promote innovation. The Business Innovation Accelerator (BIA) is a major reason why “Texas Instruments is almost synonymous with innovation,” says Ramon J. Aldag, the Pyle-Bascom Professor of business leadership and chair of the department of management and human resources at the University of Wisconsin’s school of business in Madison. The BIA is a series of steps that help would-be “intrapreneurs,” or internal entrepreneurs,

consider every angle of product development from design to pricing. Then a formal review board hears the idea and either rejects it, allocates \$50,000 in funding or refers it to a venture capital firm affiliated with TI, says Cindy Johnson, director of TI's office of best practices. Once an intrapreneurial team gets the go-ahead from the review board, it is no longer bound by TI's traditional rules or hierarchy. For example, employees involved in a business experiment don't have to check in with management or provide numbers-focused reviews, as other workers are required to do. "We were left to our own devices to utilize whatever best practices we could come up with," says Business Integration Manager Sita Lowman, one of the first inventors to go through the BIA with an idea for a mobile computer for the law enforcement community.

Although Lowman's proposed idea was never adopted because the group realized providing service and support for the product would be too expensive, the process was still worth the time and energy, she says. In addition to giving her corollary ideas for software and handheld tools for police officers, the BIA taught her how to follow through on an idea and produced a body of research that TI can now license to another company. "I'm inspired regardless of a process," says Lowman. "But this process did help me focus my inspiration and use my passion to get something done in a meaningful way."

TI's unorthodox approach to product development has earned it the reputation of being a technology leader in areas such as microchip design, projection technology, infrared cameras, handwriting recognition and high-definition television.

Freedom to Follow the Inner Muse

ANOTHER ELEMENT VITAL TO creativity is having time to think and dream; new ideas don't easily flow from staring at cubicle walls, nor from being submerged up to one's eyeballs in deadline-sensitive work. "The great enemy of innovation is reengineering because it's structured work, viewing the organization as a machine," says Prusak. "Innovation comes

from nonmachine-like thinking. If you give people some slack time, you'll increase the odds."

That's exactly why Hallmark Cards sponsors quirky training opportunities for the 740-plus members of its creative staff. The Kansas City, Mo.-based greeting card company offers special events almost on a weekly basis to prevent employees from burning out as they create 11,000 new card designs and 8,000 redesigns each year. A writer might travel to San Francisco, for example, to visit art galleries and check out fashion trends. Or a designer could attend a ceramics workshop or learn how to use "found objects" in art. Even though these experiences may not directly result in new products—Hallmark isn't about to start making clay greeting cards—they're still useful for stirring people's creative instincts. "If they look at all media and are well rounded, it'll prompt creativity in other areas," says Mary McClure, vice president and general manager for consumer product technology. "Creativity isn't something that can come directly from one area.... It's a constant antennae-up awareness and just being curious and

lated for all of it. Although I didn't necessarily come here because of its reputation for creativity, that's why I've stayed."

By its nature, Hallmark is more artistically focused than most organizations, but other types of companies use similar aesthetic training techniques. Take Tokyo-based Shiseido Co. Ltd., Japan's largest cosmetics maker. Shiseido offers creativity seminars centered on philosophical explorations of culture and art. For example, this year's semiannual seminar for the company's design and product development people allowed them to study the art and crafts of Bali and other cultures; the executive version of this seminar, which meets annually, is a three-day event designed to stimulate thinking about Shiseido's corporate philosophy and how to bring the company closer to the ideal.

Although encouraging employees to think about the company as a means of fostering creativity may seem counterintuitive, the inward focus is just a starting point, says Philip C. Anderson, associate professor at Dartmouth College's Amos Tuck School of Business Administration in Hanover, N.H., and co-

3M's "healthy disrespect" for management policy is perhaps best illustrated by the antics of Dick Drew, the inventor of masking tape and Scotch transparent tape, says 3M's retired Chairman and CEO Lewis W. Lehr. According to Lehr, Drew asked an executive for permission to buy a \$37,000 tool to improve masking tape but was refused because finances were tight. So Drew simply submitted "a blizzard of 100-dollar purchase orders over six months," says Lehr. "The machine was paid for in amounts he was authorized to spend on his own."

experiencing life in lots of different ways."

Warren Ludwig, Hallmark senior designer and supervisor, personally attests to the power of these programs. He recently spent a week at an artist camp in Colorado making a multimedia video of an imaginary alien visit and is now eager to apply this newfound knowledge to his job by creating multimedia products. "The training has just totally multiplied the horizons for me," says Ludwig. "I've been here 17-and-a-half years and have been creatively stimu-

lated by *Inside the Kaisha: Demystifying Japanese Business Behavior* (Harvard Business School Press, 1997). Shiseido's seminars are a means for employees to overcome the paralyzing fear of embarrassment that permeates Japanese culture and stifles innovation. "Avoiding embarrassment is the single fundamental motive in Japanese management," says Anderson. "That's tremendously stultifying to creativity." The executives are given abstract phrases such as "truth and beauty" and "body and soul" and asked to relate

them to Shiseido. "The themes are deliberately vague so that people spend a fair amount of time interacting with one another trying to come up with different interpretations of what that might mean," says Anderson. "What this amounts to is a way of letting people float wacky ideas in Japanese companies without losing face."

Then there's St. Paul, Minn.-based 3M Corp., the \$14 billion manufacturer whose policy of letting employees devote 15 percent of their time to conceiving new products has made it the exemplar of an innovative company. When 3M employees spend their 15 percent time, they don't have to tell management what they're doing. It's not uncommon for inventors or teams to keep management in the dark until

Elmer Blackwell, who recently became marketing supervisor for the precut tape strip product that he developed over the years with his 15 percent time and was introduced in 1996. "Just having the option is key," he says.

Creative Compensation

IF PEOPLE DON'T GET SOMETHING in return for exerting their brain cells, eventually they'll stop bothering. There are several schools of thought on how best to motivate innovative thinkers. Some people, such as William E. Halal, professor of management at George Washington University in Washington, D.C., insist that good old-fashioned cash is still the best incentive. "If you can create conditions for a free market and enterprise economy, the

money awards," he says. "The most important thing we could receive is recognition from top management."

Clash of the Functions

DIVERSITY CAN BRING OUT creativity much more than a smoothly running group in which everyone thinks the same way.

Cupertino, Calif.-based Hewlett-Packard Co.'s enterprise solutions organization assembles every project team with people from different countries. That not only helps the teams understand the cultural and business diversities of HP's global customers, it results in richer ideas and processes. For example, engineers in India tend to be able to examine a technical problem quickly and devise a logical solution because their culture emphasizes analytical thinking and education in math and sciences, says Radha Ramaswami Basu, general manager for the enterprise solutions organization. By contrast, in the United States, where business schools are popular and technical people interact with business functions, the engineers bring an ability to match business needs with technology solutions. "If you put those things together, you come up with an innovative understanding of business needs, quick solutions to problems, and the right execution and process for the solutions," says Basu.

3M, too, encourages cross-fertilization among its engineers, scientists and technicians by sponsoring a technology fair. Every September, roughly half of the company's 60 labs put up booths in an auditorium to share their latest work with other business units and 3M's executives. These networking interactions have resulted in many unexpected synergies. For example, one year the film division lab had a booth next to 3M's tape division. Scientists in both booths partnered for experiments that ultimately resulted in a brightness enhancement film for computers that gives users better, sharper images.

Tool Time

MANY COMPANIES, ESPECIALLY those that are large and dispersed, rely on technology tools to aid the creative process. In a minimalist incarnation, that can en-

Creative inspiration can come from random and unexpected sources. Years ago, Joel Birnbaum, head of Hewlett-Packard Co.'s HP Labs posed the question, "Why do most people loathe computers?" According to Lewis E. Platt, chairman, president and CEO, he found the answer to that question in the children's book *The Little Prince* by Antoine de Saint-Exupéry. In that story, the boy tells the fox how sad he is to learn that a flower he loved so much wasn't unique but instead was just a common rose. The fox replies: "To you, I am nothing more than a fox, like a hundred thousand other foxes. But if you want a friend, tame me. One only understands things that one has tamed." And so was born HP's vision of "the domesticated computer," one that adapts to people rather than asking people to adapt to the machine.

an idea emerges as a product, as happened with an innovative mouse pad product, which improves mouse precision and tracking. "As vice president, I can walk into a room, ask a guy what he's doing, and he can say, 'I'm not going to tell you; it's my 15 percent,'" says Geoffrey C. Nicholson, staff vice president, corporate technical planning and international technical operations. "This requires trust on our part and trust on their part that they're not going to get fired. Even I don't tell my boss [the CEO] everything I do." This policy has been integral in helping the company fulfill its goal of earning no less than 30 percent of its annual sales from products introduced within the last four years, says Nicholson.

"The 15 percent policy allows you to play around with new things," says

people with the talent will seize the opportunity," says Halal. In this kind of reward structure, competition for promotions and recognition is the primary creative driver. Beyond that, Halal suggests using e-cash or some other micro-payment system to reward inventiveness. Companies could even institute a copyright policy so that every time the company uses an employee's idea, he or she gets a few pennies.

For some innovative thinkers, however, status and validation matter more than money. At Sony, for example, the designers are severely reprimanded when they show the CEO a mediocre design, but this pressure is balanced by the potential of earning recognition directly from the president and being honored throughout the company, Totsuka says. "Designers don't care about

Get the competitive edge!

YES, please enter my one-year subscription (21 issues) to CIO magazine and bill me later for only \$75, a savings of \$23 off the basic rate!

Name _____

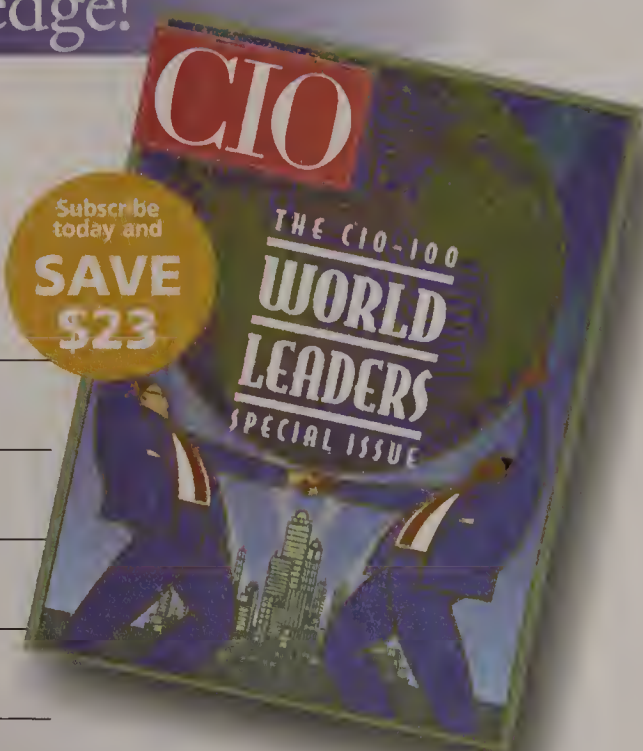
Title _____

Company Name _____

Address _____

City _____ State _____ Zip _____

The basic one -year subscription rate for CIO magazine is \$98. This is a domestic rate only (US and Canada.) The foreign rate is \$110 prepaid in U.S. currency.



**New Order —
Process Immediately!**



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

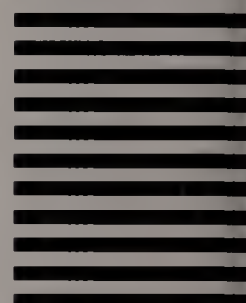
BUSINESS REPLY MAIL

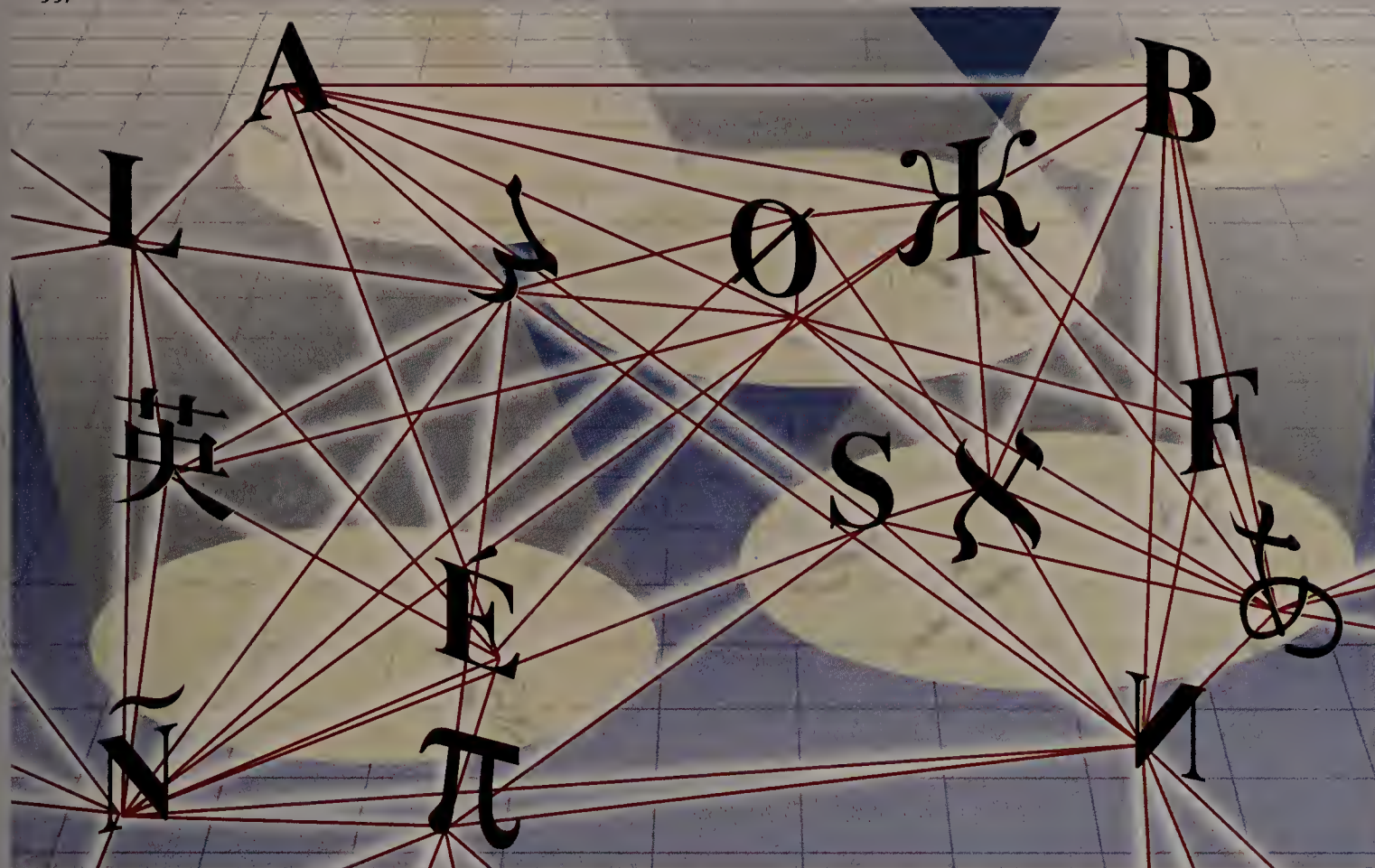
FIRST CLASS MAIL PERMIT NO.1020 FRAMINGHAM, MA

POSTAGE WILL BE PAID BY ADDRESSEE



ATTN: CIRCULATION DEPARTMENT
PO BOX 9208
FRAMINGHAM, MA 01701-9486





REMEMBER WHEN THE CHALLENGE WAS GETTING FROM POINT A TO POINT B?

Many multinational companies are now based in the same place: the entire world. And a high percentage of them are Ernst & Young clients. Because in everything from information technology to tax consulting, we offer the advantage of a single point of contact coupled with thorough local knowledge and implementation capabilities.

As part of a worldwide organization that has 72,000 people in 134 countries, we can make doing business anywhere as easy as π .

THERE ISN'T A BUSINESS WE CAN'T IMPROVE™

 **ERNST & YOUNG**



Creativity is best nourished by exposure to new ideas, says Mary McClure, vice president for consumer product technology at Hallmark. The company sends its creative staff to quirky training opportunities, from multimedia to pottery.

tail using an electronic whiteboard or Internet bulletin board. But some companies go a step further.

Texas Instruments' TI Tomorrow intranet site is chock full of content, links and tools to help people brainstorm and develop new product ideas. Better yet, it's easy and fun to use, says Ari Reubin, an engineer in the digital image sensor products division. "This tool is an equalizer," he says. "It doesn't intimidate and doesn't isolate or patronize."

Before employees approach the ideas review board, they can walk through the innovation process by visiting the site's 40 content modules. Included among the content modules are a virtual classroom for intrapreneurial teams facilitated by Gifford Pinchot, author of *Intrapreneuring: Why You Don't Have to Leave the Corporation to Become an Entrepreneur* (Harper &

Row, 1985), and an Innovation Graveyard, where once-promising projects are dissected to see why they failed. Employees can browse through a database of narratives about successful innovations both inside and outside the company and find potential collaborators with online conversations, classified ads or the TI Yellow Pages of employees' expertise areas.

At HP, technology makes possible the global collaboration that is the linchpin of the enterprise solutions organization. Every worker has desktop or conference room access to videoconferencing to share images and ideas with colleagues across the world. For example, when Gerhard Lindemann, manager of HP's computer scientists in the Solution Engineering Regional Center in Boeblingen, Germany, needs to make decisions about whether Japanese

businesses will accept a standard SAP package, he holds a videoconference.

HP also has one of the world's largest intranets, featuring more than 100 news groups and many "knowledge bank" databases. An engineer developing an end-to-end security solution for a bank could look at HP's technologies database to research the latest technology developments in other business units or the electronic sales database to find case studies of similar customer implementations. The intranet is also useful for establishing virtual, global teams. Because of time zone differences, projects are worked on almost 24 hours a day; each night, the folks in Cupertino post the day's work on the intranet, where the engineers in India pull it down when they arrive in the morning, says Basu.

Creative Hiring

ANOTHER STRATEGY FOR ENCOURAGING innovation is to hire the cream of the creative crop. As long as organizations don't define creativity so narrowly that they wind up getting rid of the variety that is the essence of creativity, this approach can be effective, says the University of Wisconsin's Aldag.

Of course, the ideal is that organizations become so well known for nurturing invention that the top creative people actually seek them out. That's what happened recently at TI with Jose Melendez, the inventor of a new biological sensor product, says Johnson. Melendez was searching for a place to develop his biological sensor and ultimately selected TI over another company that already had a market presence in this area because he said TI had an innovation-friendly environment.

"With technical people, it's the work environment that matters more than salary and position," says Tom Zosel, a 30-year 3M veteran who is currently manager of environmental initiatives. "Technical people like to do things that are different. The bottom line is that...when you get into an innovative situation, work isn't work; it's enjoyment." **CIO**

Senior Writer Jennifer Bresnahan can be reached at jbresnahan@cio.com.

StorageTek

Where the world's information goes.

Now available for your network.

After years of protecting the information of the world's largest organizations, StorageTek® understands the difficulties you face in securing data on your network. So we've gone beyond the firewall. Our NetSentry™ family of security, intrusion detection and response systems* are like 24-hour guards, instantly alerting you, then stopping suspicious activities both inside or outside your perimeter. It happens transparently, on-line, in real time, without impacting performance or security. You won't know the system is there until you need it. But you'll always have complete control with centralized management — from branch office to ATM backbone. Call StorageTek at **1 800 328-9108** or visit us on the Web. Because when you're responsible for your company's most valuable resource, it's nice to know the world's security leader is watching out for you.



www.storagetek.com/netsentry

We'll help you lower
Too bad nobody's on site

www.microcom.com/201/ • 800.822.8224 Dept. 215 • Outside U.S. 617.551.1000

Microcom Subsidiary Locations: United Kingdom (44) 1483 242 800, France (33) 1 46 62 68 68, Czech Republic (42) 49 541 0190, South Africa (27) 11 784 8128, Australia (61) 2 9 418 6688, Singapore (65) 348 6628, Japan (81) 3 3278 1041.

© 1997 Compaq Computer Corporation. All rights reserved. Compaq registered U.S. Patent and Trademark Office. All other brands and product names are trademarks of their respective owners.

Demand for remote network access is skyrocketing. What isn't growing is your budget. So how do you get your people connected without exceeding the national debt?

Introducing the Compaq Microcom 6000 Series remote access concentrators. A cost-effective, integrated dial-access solution that includes 56K modems, T1/E1, LIU/CSUs, channel banks, ISDN PRI, access servers, routers and LAN hubs. The 6000 Series revolutionizes remote

the cost of remote access,
so you can brag about it.

access with ADAPTive Switching, an intelligent switching architecture that dynamically routes calls to LAN or async applications. The result: fewer phone lines and access devices, simpler management and lower enterprise costs.

The system features reliable carrier-certified modems that guarantee a 99.23% connectivity rate. And because it supports TACACS+, RADIUS and other industry standard protocols, security is not an issue.

For a free white paper on reducing costs with ADAPTive Switching, call our toll-free number or visit our web site at www.microcom.com/201/. Microcom is a subsidiary of Compaq.

COMPAQ



Smooth Operators

Gillette is regrooming processes and systems to present one cleanshaven face to its global retail customers **BY DEREK SLATER**

WHETHER COINED THE PHRASE "RAZOR-THIN margins" was no Gillette shareholder. The Boston-based company has parlayed its consumer goods product lines—shaving gear, pens, toothbrushes, batteries and deodorant—into nearly \$10 billion in annual revenues and 19 straight years of increasing shareholder dividends. Prior to hitting some turbulence this year, its stock had averaged a 30-percent gain every year for a decade. The company's mantra is "global market share leadership," and Gillette wields a portfolio of brand names with international clout: Sensor, Paper Mate, Oral-B, Right Guard, Duracell, Braun. The Gillette Co. has been a globe-trotter almost from the get-go; its first overseas office opened in 1905, four years after the company was founded. Its products are manufactured in 27 countries and sold in over 200, and 63 percent of the company's revenues come from outside North America.

So international reach is nothing new for Gillette. What is new, though, is that its biggest customers—retailers such as U.S.-based Wal-Mart Stores Inc. and J Sainsbury PLC of London—are also becoming increasingly global. That development is causing Gillette to rethink the way it does business. Traditionally, each product line has been managed by a different business unit in each country. Those business units may do a great job selling on their own geographic turf, but if a retailer wants to know about all the Gillette products it purchased in October across North America, Africa and the Pacific Rim, Gillette has to jump through hoops to compile the information. It's not just that the computer systems are different, but the underlying financial processes and even fundamental details such as customer account

Reader ROI

Readers will learn how Gillette is taking on the challenge of process standardization to improve service to its increasingly global customer base. Topics include

- ▶ Defining the scope of the standardization project
- ▶ Strategies for change management
- ▶ How to obtain support from the workforce

PHOTOGRAPHY BY JOHN SOARES

A portrait of Robert Izzo, a middle-aged man with dark hair, wearing a dark suit, white shirt, and a patterned tie. He is smiling slightly and looking towards the camera. The background is a deep blue with large, white, abstract geometric shapes that resemble stylized letters or architectural elements.

ROBERT IZZO:

Looking at Gillette as an entity, not different product groups and categories, will help the company better serve its increasingly global customers.

THE GLOBAL ENTERPRISE

numbers may differ from one unit to another.

Seeking to hone the company's competitive edge, Gillette's president and chief operating officer, Michael C. Hawley, has articulated the goal of presenting "one face to the customer." By providing consistent, consolidated service to its global customers, the thinking is, Gillette becomes a partner in their efforts to improve their supply chains and cut costs. "We're starting to look at Gillette as an entity, not just various different product groups and categories, so we deal with [customers] on a companywide basis," says Robert A. Izzo, a vice president in the president's office. To do so, the company has to get all those business lines in sync. Through its global business process integration (GBPI) project, Gillette plans to establish and roll out common standards for financial and customer-oriented supply chain processes across the entire company by 2001. Handled poorly, a project of that magnitude could disrupt and derail the business, but Gillette has devised effective strategies for keeping the project scope manageable and employees on board.

In the Beginning

About 20 seconds into a phone conversation with the president of French retail giant Carrefour SA in early 1996, Hawley recognized that the Carrefour executive knew more about his Gillette orders than he did. For Hawley, that realization crystallized the need to invest in integrating Gillette's customer order systems. As a member of the company's senior management review board, which includes Chairman of the Board Alfred M. Zeien, Hawley had been meeting regularly with CIO

Patrick J. Zilvitis to look for opportunities to accelerate Gillette's business strategy through technology. In 1995, their discussions had already turned to aligning systems across different business units. At the beginning of 1996, they had formed a steering committee—composed of Hawley, Gillette's four executive vice presidents, the controller and a vice president working directly under Hawley—to study the viability of standardizing processes across all units and all geographies, with help from consultancy Price Waterhouse. The committee asked Zilvitis and others to visit companies that had undertaken similar initiatives; one near-unanimous recommendation from veterans of process integration was to devote full-time staffers to the effort.

Armed with that knowledge, the steering committee decided it wanted a "full-time, executive level, business-background program manager" to lead the charge. The search led to David B. Jasie, a 26-year Gillette veteran with a finance background and the communication skills, knowledge and international experience needed for the job.

Hawley called Jasie back from Germany, where he had spent four years managing the Braun appliance unit's performance in Western European markets, and installed him as vice president of global

business process integration. Jasie's financial expertise came in handy not only in understanding the target processes but in putting together a cost justification for the project. (He won't divulge the project's target ROI other than to characterize it as "significant, not marginal.")

Jasie is also comfortable talking technology and works closely with Zilvitis since information systems play a pivotal role in the project. In fact, the two men share the project leadership office on the 10th floor of Gillette's headquarters in a downtown Boston skyscraper.

"Our information systems

"We want to spend the time analyzing the information, not pulling it together."

—David Jasie





CIO PATRICK ZILVITIS (left) and VP DAVID JASIE share the job of managing Gillette's global business process integration project. The fact that both names hang on the door of the project leadership office speaks volumes about the importance of IS and business collaboration.

are actually quite good," says Jasie. "The challenge is that they aren't the same." For instance, the Braun appliance and Oral-B dental care product lines are managed by separate global organizations. Each, according to Jasie, has outstanding executive and management information systems that summarize worldwide performance. However, the two systems grew up independently; both brands came into the Gillette fold by acquisition. Getting the two systems to compound their data—seamlessly, anyway—is a headache. That's further aggravated by other Gillette product organizations that are run on a country-by-country basis. "While we do a lot of communicating globally, there's an aw-

ful lot of patching that's been done [to link the systems]," Jasie says.

Truly integrating such varied organizations, of course, is much more than an issue of getting Unix servers to talk to mainframe databases. The systems are posited on underlying business processes, and until those processes are in sync, the "one face" Gillette presents to its global customers will be scruffy at best. Closing schedules—the times designated as the end of manufacturing and financial periods—provide an example of a process that differs from one Gillette unit to others in different time zones. "If you [simply] combine the numbers, you aren't adding up like time frames," Jasie notes. Differing vendor

and customer identification numbering schemes and a host of other process details, ranging from the colossal to the minute, introduce still more layers of complexity. It all adds up to make synchronization a project of remarkable scope and difficulty. With standardized closing schedules, though, Gillette will more easily be able to collate and analyze financial data from around the world for internal use as well as for the benefit of global customers.

Defining the Scope

To stay true to Hawley's "one face" vision, the steering committee quickly settled on confining the scope of the GBPI project to areas that directly affect the

customer: financial systems and "bid-to-cash" supply chain processes such as order entry. The bid-to-cash heading encompasses processes from the time a Gillette customer formally expresses interest in making a purchase, through product purchase and distribution, to when Gillette actually receives payment. The terminology cuts across more traditional process areas (such as accounts receivable), which are typically the domain of a single corporate department; it focuses on the interaction of departments toward a common goal, according to Jeffrey F. Berg, director of Pitiglio, Rabin, Todd & McGrath, an international supply chain consultancy in Stamford, Conn.

Although the GBPI steering committee honed in on just two areas, it considered including other process areas such as human resources and manufacturing planning. The committee crossed HR off its list fairly quickly because, as Zilvitis explains, "it isn't anywhere close to being as integrated with customer activities" as the financial and supply chain areas. Manufacturing missed the cut because it's an enormous process area that would threaten the manageability of the GBPI project. In addition, because manufacturing and production processes are in some key respects already dictated by central groups at Gillette, the need is less pressing. "The way [Gillette] continually takes costs out of [how] it manufactures its products is clearly a strength," says Connie Maneaty, an analyst at Bear, Stearns & Co. Inc., an investment banking, trading and brokerage firm in New York. Nevertheless, manufacturing processes may be the subject of a future integration project, Zilvitis says.

Starting to Standardize

One of the most important process changes in the works is the creation of cross-functional teams with responsibility for managing bid-to-cash customer contact. In the past, a customer had to work with different Gillette representatives for each step of the bid-to-cash cycle: an order entry clerk, a distribution contact who scheduled deliveries, and various credit department and accounts receivable Gillette work-

ers. To purchase five Gillette products therefore could mean doing business with 20 or more Gillette reps. As GBPI is implemented, Gillette customers will deal with a single rep for each product line who serves as the contact point for all those functions. In addition, since the back-office processes such as order entry and financials will be homogenized, Gillette will be able to consolidate customer service functions across multiple business lines into a single shared facility.

"One of our trade customers can place an order for any Gillette product [at that central point], and all orders will be handled by the same process," Zilvitis says. What's more, standardization opens the door to centralization of operations across national borders. For example, Australia and New Zealand are working toward shared service functions. Ultimately, Zilvitis envisions

more such cross-border cooperation, enabling, say, a single service center for all German-speaking countries.

Gillette is also standardizing its numbering schemes for products and customers as well as its method for defining customers. "It sounds simple, but it isn't," says Zilvitis. With 100 (or more) databases of customer information scattered throughout the various geographic markets of Gillette's myriad product lines, getting a global view of a single customer account is an integration challenge. "We have the information. We can pull it together, but we want to do it more efficiently and make sure it's harmonized," says Jasie. "We want to spend the time analyzing the information, not pulling it together."

Getting Over It

Zilvitis says the biggest barriers for projects like GBPI lie not in the technol-

Being There

*Where there's a will,
there's a way to plug into
new markets*

WITH THE MISHMASH OF telecommunications capabilities, tax and finance regulations, and other variables in various nations, information technology might appear to be a hindrance and not a help for a company looking to expand into new geographic markets. The Gillette Co.'s CIO Patrick J. Zilvitis says his company has enough will to find the ways, no matter how elusive.

The former Eastern Bloc nations rank among the most difficult markets in which to set up shop, Zilvitis says. "When we first went into Russia, we found that some of the phones were pre-analog," he recounts. "Many PBXs [private branch exchanges] were still plug-board, so there were some pretty substantial technology challenges." That level of technology makes it tough to reliably plug local Gillette operations into the worldwide communications network. After some

extensive poking around, Gillette discovered that the best infrastructure in many Eastern European nations was running the airports—under the watch of a private company. Gillette was able to connect to the private company as a way into a country and then create links to its local operations.

The way to find such solutions, Zilvitis says, is to have "a solid group of people around the world who have been [to these nations] already and understand where to go." The company has some 350 expatriates, non-Americans with management and expansion experience. Their knowledge of local markets and cultures comes in handy when the company expands into their home countries. Gillette regularly brings management candidates in various disciplines (systems, marketing, sales, etc.) to its Boston headquarters for training.

Robert A. Izzo, a vice president in the president's office at Gillette, says expansion is getting easier. "The advantage we have today is that there are very few places in the world in which we don't have a fairly strong presence," whether in the form of manufacturing or sales operations or joint ventures.

ogy but in softer issues—defining the scope of the project and managing the workforce through the changes. (For more on technologies that enable globalization, see “Being There,” Page 64.) Jasie agrees that scope creep is the most insidious enemy of a project like GBPI. “You have to put some boundaries around it; otherwise it ends up being every aspect of the business, and that’s not possible,” he says. In the meantime, the project team keeps the GBPI scope clear by scrutinizing proposed process targets to see if they fit the bid-to-cash or financial criteria; if they don’t fit, they’re not considered for standardization.

Retooling processes inevitably affects how employees work and thus has plenty of potential to meet resistance from the workforce. Such changes can be made only “by senior management thinking through the alternatives and

making a top-down decision,” says Zilvitis. “But then, the only way to cause it to be implemented is bottom-up.”

The top-down part of the equation is solved nicely by the high-level leadership chosen by the steering committee. The fact that Jasie and Zilvitis both appear atop the project organizational chart “gives assurance to the business people and to the organization that this is, in fact, a joint program. And the fact that it reports directly to Mike Hawley likewise gives it the global perspective,” says Jasie, who works on GBPI issues full time. Zilvitis says the plan calls for him to spend 50 percent of his time on GBPI work and 50 percent on “the rest of the [CIO] job. But in practice, I probably spend 100 percent on GBPI and then 50 percent more on the rest.” Reporting their progress to Hawley and the steering committee keeps Jasie and

Zilvitis on their toes. “It’s a very active board,” says Zilvitis. That the company’s top executives take this IS-intensive initiative so seriously is nothing new at Gillette. Zilvitis has long aimed to, as he puts it, “weave IS into the fabric of the business.” For instance, each business unit has its own CIO, and every business unit is required to have a chapter on IT planning as part of its formal strategic business plan.

To ensure the bottom-up support of the workforce, Jasie and Zilvitis took care to pull the right people into the project, which required some wrangling with the business units. “We tried to get the opinion leaders” in a given business whenever possible, says Jasie. (The original business unit positions of those chosen for the team were filled, which Zilvitis notes is an important measuring stick of executive commitment to a project.) Jasie and Zilvitis also deliberately sought input from all functional and geographic areas on which processes were to become the standards in each area. The GBPI team includes eight directors, who represent an equal mixture of IT and business-line functions; 20 more employees have also worked on the GBPI project prior to its implementation. More than 200 Gillette workers in Mexico, Europe, the Far East and the United States have participated in interactive workshops to identify and compare existing processes. After the first round of workshops, the GBPI team collected the results and worked out recommended process models. To cement the workshop participants’ buy-in, the team revisited them to present recommendations.

After the first year, the GBPI project’s progress is on track. Although Jasie’s cost-justification study at the outset focused on cost reductions, it’s clear that Gillette has more on its mind than shaving its expenses. “We want to differentiate ourselves in the marketplace by providing superior customer service,” Zilvitis says. If standardized processes and systems help further the company’s goal of global market share leadership, Gillette’s shareholders will keep right on smiling. **CIO**

Senior Writer Derek Slater can be reached at dslater@cio.com.

With Gillette operating groups in Asia Pacific, Latin America, Africa/Middle East, and Eastern and Western Europe, most new countries being brought on board can be hooked up to existing operations nearby to lean on their infrastructure, systems and experience.

Emerging technologies are also simplifying the task of global integration. For example, intranet technology is providing a standardized way for Gillette to communicate with its suppliers globally. “Electronic commerce is really growing, allowing our customers to track order status via the Net through our firewall,” says Zilvitis. Although help desk software packages and industrial-strength network management tools have some growing up to do, they will also have a role to play; Gillette hopes eventually to support a few standard applications across its business units worldwide and to consolidate network oversight into a small number of command centers.

The upshot is that Gillette will be able to knit the company together more closely even as its global reach continues to expand. —D. Slater



Rewriting *the* Code

Proposed revisions to state laws could make your life more difficult **BY JENNIFER BRESNAHAN**

YOU'VE GOT A NIGHTMARE ON YOUR HANDS. Over the weekend, your entire call center virtually shut down because of a bug in the software application running it. Your customer service reps can't access the databases or expert systems and have resorted to taking notes by hand.irate customers are swamping the company's voice mailbox with angry calls. You reach for the phone to call the vendor that sold you the software package. After all, you paid millions for what's turned out to be a bum product, so it seems reasonable to hold the software vendor responsible.

Soon, that might not be the case. Even as you read this, a group of lawyers is drafting changes to commercial law that, if passed, would reduce liability for software vendors even if they produce products that don't work, corrupt a customer's data, release products that infringe on copyrights or

sell custom-developed systems to a company's competitor.

The Uniform Commercial Code (UCC) was designed in the 1950s to govern product manufacturers' liability and responsibility for toasters, washing machines and the like. In 1993, the National Conference of Commissioners of Uniform State Laws (NCCUSL), a volunteer group of lawyers that proposes and drafts new uniform state laws, started revising the code to cover the licensing of information-based products, including software, databases, movies, audio products, books and computer-based services such as airline ticketing. When NCCUSL and its two oversight groups, the American Bar Association and the American Law Institute, agree on the final draft in the spring of 1998, they'll send it off to individual states for a vote. The states tend to pass these kinds of laws without much change, says Susan Nycum, an international partner in the Palo Alto, Calif., office of Baker & McKenzie,

ILLUSTRATION BY RICHARD DOWNS



who represents the Society for Information Management.

While the code revisions aim to improve existing law—for example, resolving the legality of authenticated electronic signatures—they also contain changes that are not at all in the interests of companies buying off-the-shelf or custom-developed software. The changes could leave companies out on a limb if something goes wrong and guilty by default if software they use fails to deliver to their customers. Ultimately, executives themselves will be accountable. “If [trusting a vendor turns out to be] a bad business decision and the company isn’t protected, why wouldn’t you be held responsible for your actions?” asks Robert M. Rubin, vice president and CIO for Elf Atochem North America Inc. in Philadelphia.

But it’s not too late to have your say. Until several months ago, the debate was mainly shaped by vendors, which have devoted more time and resources to getting their side heard by the committee than have software customers. As a result, “what we have now is a collection of wordings that are the most publisher-favorable that can be,” says Cem Kaner, an attorney in Santa Clara, Calif., who specializes in computer law and is senior author of *Testing Computer Software* (Thomson, 1993). But a group of Fortune 500 companies, Elf Atochem among them, recently banded together to fight the most odious provisions in the revisions. Following are some of their top concerns.

Help Yourself

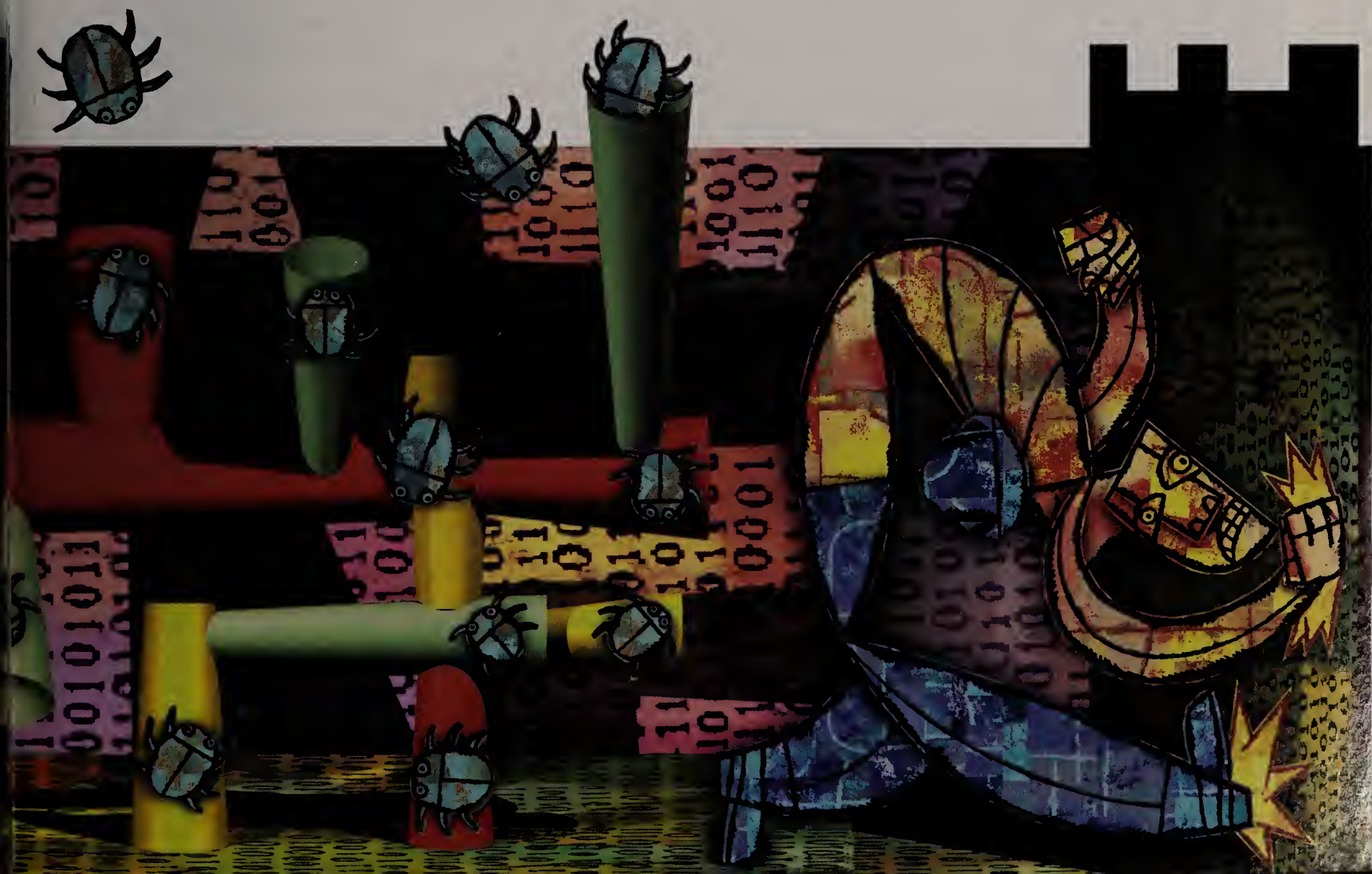
One of the more controversial aspects of the code revision is the “self-help” provision, which would allow vendors to dis-

able a client’s potentially mission-critical software application if the client company doesn’t pay its bill. Vendors, especially small ones, argue that without this protection, they could go bankrupt if one of their large customers refuses to pay. Although it obviously wouldn’t go under as a result of nonpayment, Redmond, Wash.-based Microsoft Corp. supports the rationale behind the provision that vendors should be able to help themselves. “If you’re not going to pay for it, you shouldn’t be able to use it,” says Bob Gormulkiewicz, a Microsoft senior corporate attorney.

But companies that buy software contend that it’s not always clear who’s right in such disputes. For example, a licensee may think using its software application to process data for a subsidiary is fine or may refuse to pay a bill because it deems a software application defective, whereas the vendor sees both cases as a breach of contract. Each party believes its arguments are valid, but, nevertheless, the vendor would be able to unilaterally disable the software—which, needless to say, could be disastrous in cases of mission-critical applications.

Reader ROI

Proposed changes to the Uniform Commercial Code have severe implications for your relationships with your software vendors. This article explains the proposed revisions and how they could leave your company unprotected from defective software products, viruses and intellectual property lawsuits.



POLITICAL SCENE

Perfect Tender Law

Under the proposed revisions, vendors would no longer be accountable for every bug in a software product. As long as their products were "mostly right," they would be within acceptable limits of the contract, says Nycum. "If [fixing a problem] costs vendors too much versus our inconvenience and damage, they don't have to," she says.

Vendors say this provision merely reflects the reality that software by nature isn't perfect, and customers, therefore, should accept some flaws. And companies would get something in return, says J.D. Marple, manager of legislative policy at the Washington-based Business Software Alliance. For the first time, customers would be guaranteed a refund when the software vendor's product fails to deliver, he says.

But companies see this as the last straw in a protracted battle with software vendors over delivering software. Though vendors are obliged under current law to deliver software that "works," for years they've been stretching the definition of "works" to the limit, forcing their customers to pay them to assume the burden of unfinished product development. Trying to legitimize that now by curtailing the customer's right to a refund is a fresh outrage, many companies say.

Moreover, in exchange for this supposed concession, vendors would be able to leverage the provision in court cases to "prove" that the customer, who in reality rarely reads the fine print on a box of software, agreed to the warranty terms enumerated on the box. Customers also would have a hard time qualifying for a refund since the definition of a material breach would be much more complex. "The product has to be more terrible than [it had to be in the past] before the customer would have a right to a refund," explains Kaner.

Intellectual Property Liability

Today, if a vendor sells a software package and a third party surfaces later to claim that she created the program first, the vendor has to pay the final result of any suit against its corporate customers. But under the proposed revisions, companies would be unprotected against hidden patents and other copyright infringements. Vendors would be liable only if they were aware of any copyright or patent infringements.

"A company like Novell is not going to stand by and let its customers get sued," Marple reasons.

Maybe not, but there would be no law saying it had to take financial responsibility, says Nycum. So a company could end up having to pay for software twice, once to the true owners and once to the original software vendor. A guarantee that the vendor doesn't know of an infringement isn't particularly helpful if the vendor doesn't take responsibility to help if one arises, Nycum says.

Viruses

Another area of contention is deciding who's responsible for computer viruses. Under the proposed provisions, vendors would accept responsibility only for virus damage to computer equipment, not the data stored in it. If a software virus were to gobble up a company's information resources, the company would simply be out of luck.

Marple argues that vendors shouldn't be held liable for something they can't control, especially where the Internet is

involved. "It's analogous to your car dealership all of a sudden having liability if you drive off the lot and get hit by a car," he explains. Moreover, vendors maintain that running a virus check really isn't too much to ask of a customer. "It's mostly a nuisance," admits Barney Kantar, procurement manager for Wilmington, Del.-based DuPont Co.

But it's the principle of the matter that has companies upset. Companies are not better equipped than vendors to detect and root out viruses. Besides, they'd like to think that the

What You Can Do

It's not too late to influence the UCC drafting committee. For more information, visit www.softwareindustry.org/issues/guide or call the drafting committee at 707 966-5211.

products they buy are, if not completely perfect, at least reasonably safe. Just as Nabisco or Kellogg has an obligation to ensure that its cereal products are free from rat droppings or other contaminants, software vendors should take responsibility for the purity of their software products, companies say.

Tougher to Negotiate

Ultimately, business people fear the revisions will hinder their ability to negotiate favorable—or even fair—contracts with vendors. While it's theoretically true that companies can negotiate out provisions they don't like, companies would be at a disadvantage because vendors could point to the unfavorable law as the standard. "Negotiations will be much more protracted," says Ross Piper of The Research Board Inc., a New York-based CIO member organization for Fortune 100 companies. "It will be an uphill fight to bring balance and achieve merely what is commonplace today."

Only the very largest companies can afford to employ individuals familiar with all the nuances of the code revisions. And even those companies are apt to miss things because in-house counsel often doesn't get involved with contracts below a certain dollar amount. In the end, the new code could cause a company to die "the death of a thousand cuts," says Kantar. "Unfavorable provisions in many small contracts come back as a large problem cumulatively," he says. Companies will end up spending easily twice as much on software as they do today, says Nycum.

Of course, even if the proposed revisions are adopted into law, the vendors will probably discard them eventually to gain competitive advantage, says Rubin. And all of this fuss could become a moot point tomorrow as the code continues to change during the bimonthly drafting sessions. But that doesn't seem likely. "I think that there's a fair chance that they will pass with relatively insignificant revisions in most areas," says Kaner. **CIO**

Senior Writer Jennifer Bresnahan can be reached via e-mail at jbresnahan@cio.com.

Do
you have
faith in your
network?

Do you have a Power Network?

Let's face it, you and your network are sort of joined at the hip. It succeeds. So do you. Which is why you need a network you can trust. A Nortel Power Network can transform your disparate legacy networks – data, voice, video – into an integrated multimedia network that's more cost-effective, flexible and, yes, more reliable. So think Power Network and keep the faith.

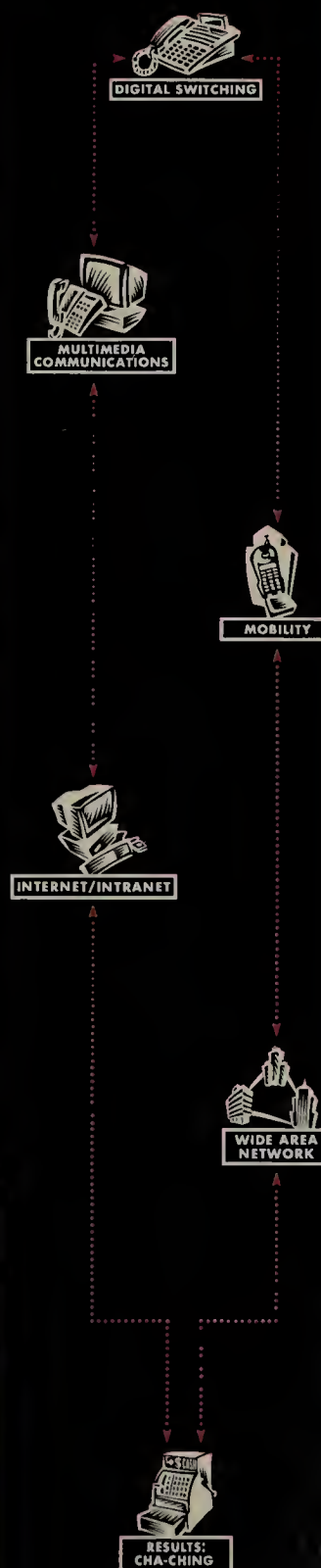
For an evaluation of your network, contact us today. 1-800-4NORTEL, department J18C or www.nortel.com/J18C.

NORTEL
NORTHERN TELECOM

NORTEL

POWER

NETWORKS™



Invisible Technology

*There's plenty of flashy call center technology to be had.
The key is applying it to serve your customers better.*

BY CHERYL DAHLE

FOR HALIFAX DIRECT IN LEEDS, England, the telephone banking subsidiary of Halifax PLC, all the attention has been a trifle bewildering. Not that winning the coveted 1997 European Call Center of the Year award and hosting a parade of admiring executives from Japan, Australia and the United States hasn't been flattering, mind you. But the adulation seems a bit ironic to Mike Riley, project manager of the team that created Halifax Direct. The very reason the call center has drawn attention is that the technology itself is invisible to the people Halifax is most concerned with impressing—customers. “The customers who call to use the center have no idea about the technology behind it,” says Riley, Halifax Direct's controller. “And frankly, it's better that way. They just know that their calls are answered quickly and professionally.”

The call center, operational for almost two years now, is the embodiment of a truism that many companies have yet to heed: Technology is at its finest when it can be ignored. With Halifax Direct, the bank has managed to satisfy both its own needs to maintain a flexible business model and expand into new mar-

kets as well as its customers' appetite for convenience and service. So while the neat-to-keen technology running the center is indeed cutting edge, what the bank is doing with it is even more impressive.

The impetus behind the call center was a startling loss in market share in 1994 to two new competitors: A telebank that conducted business solely over the phone—no branches, no tellers—

But Riley, selected to head the project with his boss, Dick Spelman, director of distribution, was suspicious of the return on investment for a call center that provided only support and service. Sure, the move would prevent the bank from shedding more customers. But the savings on branch costs as customer traffic shifted from standing lines to telephone lines would be minimal, given that the company preferred to transfer rather than lay off the 1,300 branch employees the system could replace.

To cover the project team's collective flank on the ROI question, Riley looked for ways that the call center might bring in new revenues. What he and Spelman came up with was using the call center as a new way to pitch bank products. Although bank telemarketing is not rare in the United States, outbound calling in England verges on

heresy. When Riley and Spelman first mentioned the idea, executives at the bank thought they were nuts. “I think at that point the mood was fairly conservative, and we were seen as a bit of a couple of wild men,” Riley says. “So it was a deep breath and a swallow.”

While Halifax executives were skeptical, none could find a good reason to



delivered a hit to Halifax's loan and personal bank account business; and an insurance company that sold over the phone knocked the wind out of Halifax's insurance line. The company realized it had to counter customer losses to these startups. If its 20 million customers wanted the convenience of telebanking, Halifax would deliver it, by golly.

MAKING THE TRANSITION IS EASY IF YOU'RE OUTFITTED RIGHT.

MS MILLENNIUM Your MSM/2000 Outfitter

Evolving to Year 2000 compliance and beyond is easy when you start with the best tool: MSM/2000. Designed by MS Millennium to maximize the productivity of teams engaged in this time-critical transition, MSM/2000 is a comprehensive suite of software tools that are already being deployed at one of Wall Street's largest firms.

MSM/2000 manages all the phases of the date conversion. It automatically modifies source programs, JCL and other library statements, as well as compiles and checks out the modified programs.

This interactive tool features:

- **Aggressive MVS Inventory** - Tells you what your production inventory is! The MSM/2000 Inventory Module automatically tracks the conversion progress and eliminates the necessity to "Freeze" applications for the duration of the conversion effort.
- **Substantive Impact Analysis** - Reports to you what is at risk and what it will take to fix it!
- **Sophisticated Parsing Approach** - Utilizes base displacement approach - as opposed to text scan - to get 100% of all targets.
- **Intuitive Seeding Process** - Recommends to the user which are the best candidates for renovation!
- **Comprehensive Regression Test Plan** - Determines what's been changed and what needs to be tested based on dependencies and interdependencies.
- **Dynamic Run-Time Data Bridging Module** - Virtually eliminates the compliance deadline for conversion! Your files are dynamically translated through MSM/2000's closed loop utilizing the MVS/SSI.

Evolve with an effective tool backed by highly advanced humans. The most important step you can take toward Year 2000 is selecting the right conversion partner to outfit you properly from the start. Our competition already knows who we are, and you should, too! Select MS Millennium, the company other conversion companies are calling for advice.

Contact us today to see the MSM/2000 demonstrated!

Phone: (888) MSM-2003 Fax: (908) 469-2464
E-mail: msm2000@msmillennium.com
www.msmillennium.com



MS MILLENNIUM

A Subsidiary of The Matlen Silver Group, Inc.

Tower Building • 270 Davidson Avenue, Somerset, NJ 08873

Handshake

turn down the proposal, Riley says. The additional outbound calling capabilities would account for only £300,000 of the £24 million (\$38 million) price tag, which included buying and renovating a building as well as assembling the appropriate technology and staff. Besides, if the nutty plan worked, it would provide a clear return for building the call center as well as launch the bank into new markets.

The outbound calling strategy has been an unqualified success so far. The 12-month-long pilot of the strategy generated £22 million (\$37 million) in loan business, Riley says.

But Halifax isn't achieving such results because it's one of the first British banks to ring up prospective customers at the dinner hour. It's successful because it's ringing them up with offers they want to hear. Halifax mines its own cus-

tomers databases to find consumers likely to be interested in its various products, Riley says. For instance, reps contact people whose loans are almost paid off and offer to extend the loan if the customer needs money for anything else. They contact people whose tax-exempt savings accounts have reached maturity and discuss reinvesting the funds in various Halifax products. Reps also call people who carry a high balance in their checking accounts and recommend more lucrative investments—in Halifax products, of course.

Halifax executives are a little incredulous about the strategy's success, Riley says. "There is a certain element of surprise," he says. "I think people still don't realize the full potential of outbound calling."

The setup of the call center also allows the bank to be more flexible. Many call

centers divide up phone representatives according to product lines. So one group of service reps would handle calls on Visa accounts, another would handle checking account inquiries, etc. At Halifax Direct, all 550 representatives are "multiskilled." Each rep who logs on the system enters his or her four top areas of product knowledge, and calls are routed to the most knowledgeable rep available. That means when Halifax adds new products to its portfolio, it does not have to recruit a slew of new operators and train them on the system; it need only retrain a group of seasoned call center reps. In other words, time to market is reduced substantially. "Halifax Direct is an example of a company that is very adaptable to changing business needs," says Donald Jones, chairman and CEO of Emerging Technology Solutions International, which assembled the technology for the project. "If they want to add a product line, they're about a week away."

The other benefit of multiskilling is that it opens the door for an incentive program to get reps to learn more about the products they are servicing. Halifax Direct pays reps based on the number of products for which they can field calls and provides the necessary training, support and testing to ensure they can learn as much as they take on. Finally, fielding calls on multiple topics helps reps stave off the boredom that can accompany the repetitive nature of the job. "The last thing you want to be doing is taking the same call all day long," says Customer Liaison Officer Wayne Brown. "It breaks your day up to be switching from [product to product]." That benefits the customer, who is less likely to get a laconic, just-woke-up-from-my-nap voice on the other end. Multiskilling also means that customers with questions that span several products don't have to be transferred or put on hold listening to Barry Manilow Muzak indefinitely.

THE NEW SALES CHANNEL AND flexibility provided a win for the bank; the inbound calling capabilities gave customers something to rave about. Building customer-oriented technology seemed to Jones a matter of simple common sense. Although no market research or testing was done, the team

A Close Call

Advice from the trenches

WHEN DONALD JONES WAS HIRED to help Halifax Bank build its call center, he was working for Digital Systems in Seattle. He had collaborated with project leader Mike Riley before in Halifax's loans reclamation area. So when Riley needed help building the call center, he tracked down Jones on another continent.

Two months into the task, supervisors from Jones' employer came to visit the project. Alarmed that Jones was being given such a prominent role in the process and fearing additional liabilities for the company should something go wrong, they pulled him from the project.

"They called me up one night when I was at the pub having a few drinks with the team and said they were canceling the contract," Jones recalls. "My response was, 'I'm faxing you my letter of resignation, then. I've given these people my commitment.'"

Dick Spelman, Halifax's director of distribution and other executives de-

cided to put the project in Jones's lonely hands, and the rest is history. That was the start of Jones's company, Emerging Technology Solutions International (ETSI), now a flourishing business with branches in Leeds, Glasgow and Seattle.

Jones, who has worked on more than 120 call centers in his career, has this advice for anyone thinking of building one:

- If a company can't get a call center up and running in six months, it should abandon the project; the technology will be obsolete by the time it's finished. (Halifax Direct was conceived and built in just five months.)
- Part of the reason Halifax Direct was successful was that the project team was small (six people), and it had a lot of authority. Management's only criteria was to get the job done.
- Don't build a call center based on what your business is today. Build it based on the way your business is changing.

—C. Dahle

TOUCH → technology

It's not just about technology.
It's about how it works.

Does it solve a problem or
improve communication? Is it
easy to use?

Does it make an employee
more productive?



Today's CIO and MIS manager are
not just looking at products that are
bigger and faster, but also smarter
and more efficient. Not just where
employees are working but also how
they are working.

Only CES, the world's largest
consumer technology trade show,
gives you the opportunity to see,
touch and experience the consumer
technology products of today and
tomorrow. From TV/PCs and
Multimedia Laptops to Digital TV,
DVD, Remote Computing, Wireless,
Home Theater and more. Leading IT
executives, VARs, systems integrators
and developers from around the
world will be there. **Will you?**

Register today!

Call: 703-907-7600

Fax-on-Demand Service:

1-888-CES-SHOW

(1-888-237-7469)

Use our Web site:

www.cemacity.org

1998 International

CES

THE SOURCE FOR CONSUMER TECHNOLOGIES

JANUARY 8-11, 1998

LAS VEGAS, NEVADA **USA**

Handshake

charged with building the call center asked itself questions such as, "Do I like being on hold forever?" Since no one likes being left on hold, the team concluded it should find a way to avoid treating its customers that way, Riley says. The result is a logical and swift system for processing calls efficiently that is absolutely invisible to the customer. Any information a customer enters in a phone tree menu will follow the call to a representative's terminal. A customer who makes two mistakes in the automated system immediately gets connected to a rep, who can see what the customer was trying to do. If a rep needs to transfer a call to a more skilled rep, any information typed into the system follows the call. All of that is possible because of sophisticated computer telephony integration software that Jones himself coded.

The project team also decided to use case-based reasoning (CBR) scripting to help reps process calls more efficiently. In part, they did so to maximize the scant 35 reps that the team had been able to recruit and train by the aggressive deadline for getting the call center up and running; they had wanted to open with 400. The software package from Inference generates scripts for inbound calls that automatically jump to the correct responses and follow-up questions. The software also tracks the top 10 customer questions of the day so that common queries related to news or the season appear on a rep's first screen. CBR has enabled the call center to deftly handle increasing call volumes. Within the first month of operation in 1995, the call center handled 20,000 calls. A year later, it took 450,000. Today it averages between 30,000 and 40,000 per day. While the number of reps has increased to over 500, the technology has not changed. And the CBR software allows Halifax to resolve most calls—whether customers are calling to check a balance, transfer funds or get product information—in about two to three minutes.

Best of all, 30 percent of Halifax's 20 million customers now do their business over the phone instead of at a branch.

That has reduced branch costs, enabled the bank to close some branches, and has earned Halifax customer loyalty as well—98 percent of the customers using the telebanking service rate it as excellent, though they've no idea how it works, Riley says.

THE PROJECT TEAM ALSO MADE several investments in the design of the center that at the time might have seemed like frills to bean-counter types. But they have more than paid off in the long term. From Riley's perspective, the smartest thing the project team did was to pay attention to the needs of the people who would be working the phones. Most call centers are digital sweatshops—operators crammed into cubicles like sardines, headsets glued on, eyes glazed from staring at tiny monitors. That was exactly what Halifax Direct did not want to build. "We believe that if people enjoy what they're doing, they do it better," Riley says. "We

Even managers work on Christmas. Last year one came in dressed as Father Christmas, and the company sprang for salmon and mince pie.

wanted to give them the right tools and technology to do things properly."

So rather than build a maze of cubbyholes for the operators, Halifax Direct built curved pods that allow operators to see each other and interact. The lights in the former armored tank factory are bounced off the ceiling to reduce screen glare, and green plants are everywhere. "If they are feeling they need to get up and stretch their legs a bit, the headset cords are long enough so that they can do that," says Callum Woodhams, a team manager at the call center. "They don't have to sit in front of their PCs all day long."

The same concerns informed the setup for training and workflow. Operators are divided into teams of eight, with one team leader who helps

answer questions and handle problems. These teams have become social groups as well as workgroups. Halifax Direct routinely chips in for munchies and pints for meetings outside work hours or if the crew wants to get together at a pub. "We're basically friends who work together," says Brown, who has worked at Halifax Direct for almost two years.

Managers have no offices, and they work the same schedules the reps do—including coming in on Christmas day. Last year for the holiday, one of the managers came in dressed as Father Christmas, and the company sprang for salmon and mince pie. "Nobody wants to be working Christmas day," Brown says. "It's nice to know that the managers who are asking you to do that are doing it themselves."

All of this equity keeps people happy at Halifax Direct. "It's a very open place," Woodhams says. "People are prepared to constructively give their opinions, and there are no hidden agendas flying around. I wouldn't change jobs unless someone offered me lots and lots of money."

So what's the bottom line for all this warm fuzziness? Incredibly low turnover: between 5 and 6 percent, according to Riley. Compared with the annual turnover rate of 130 percent at one call center the project team visited—or even with the average of about 15 to 20 percent in U.S. call centers—the figure is impressive. Low turnover translates to better customer service from more experienced reps and lower costs for training and recruiting.

Managers at Halifax Direct expect the hoopla over the call center's technology will eventually die down. Even Jones admits that Halifax Direct will likely be leapfrogged by something cooler, newer and more cutting edge within the next year. That's just fine, Riley says. What matters to the bank is that the sound strategy behind the center will remain intact. After all, though technologies come in and out of vogue, good business sense never goes out of style. **CIO**

Associate Editor Cheryl Dahle can be reached at cdahle@cio.com.

need results?



think inside the box.

You don't have to "think outside the box" for technology solutions anymore—our I.T. professionals have done it for you. XLConnect brings you the powerful advantage of experience and proven methodologies to solve the complex challenges of planning, building, and managing technology solutions. Based on our best practices model, our proven approach to enterprise computing allows us to "box in" complex integration issues and deliver solutions on time and on budget. So don't think outside the box—we've packaged everything you need inside. To open your own solution, call 1.888.444.4XLC, or visit our Web site at www.xlconnect.com.

XLConnect



Index

Page numbers refer to the first page of the article(s) in which the company is mentioned. This index is provided as a service to readers. The publisher does not assume any liability for errors or omissions.

Company Index

3M Corp.	50
American Productivity & Quality Center	12
American Society for Microbiology	12
Arthur Andersen	12
Astra Merck Inc.	34
Baker & McKenzie	66
Bayer AG	12
Bear, Stearns & Co. Inc.	60
Boise Cascade Office Products	12
Boston Consulting Group Inc., The	50
Business Software Alliance	66
Campbell Software Inc.	12
Case Corp.	42
Charles Schwab Corp., The	12
Christian & Timbers	12
Dartmouth College	50
DHS & Associates Inc.	42
DuPont Co.	66
Elf Atochem North America Inc.	66
Emerging Technology Solutions International	70
Fallon McElligott	50
Fidelity Investments	28
Forrester Research Inc.	12
Gartner Group Inc.	42
George Washington University	50
Giga Information Group Inc.	42
Gillette Co., The	60
Halifax Direct	70
Hallmark Cards	50
Hewlett-Packard Co.	50
IBM Corp.'s Consulting Group	50
Meta Group Inc.	42
Microsoft Corp.	12, 66
Net/Tech International Inc.	12
Network-1 Software & Technology	12
Open Market Inc.	50
Partners HealthCare System Inc.	42
Pitiglio, Rabin, Todd & McGrath	60
Research Board Inc., The	66
Rosenbluth International Inc.	34
Schlumberger Ltd.	28
Shiseido Co. Ltd.	50
Sony Corp.	50

Texas Instruments Inc.	50
University of Wisconsin	50
Virginia Power	42
Visa International	66
Zona Research Inc.	42

Advertiser Index

* Denotes Section 2 Advertisers

3Com/US Robotics	22A
Axiom Corp.	11*
ADP Inc.	21*
Alltel	3*
Amdahl Corp.	33*
BDM International Inc.	17
Bellcore	48*
Bindview	45
CCD On-Line Systems	59
Ciber Consulting Inc.	29*
CIO Communications Inc.	C3, C3*, 7*, 23, 24*, 65, 68, 73, 75, 77*
CMD Corp.	67
Compaq Computer Corp.	26
Computer Associates International Inc.	C4*, 46
Computer Measurement Group Inc.	25*
Consumer Electronics Mfrs. Assn.	73*
Dell Computer Corp.	C2
Deloitte & Touche LLP	13
EMC Corp.	31*
Encore Computer Corp.	49
Ernst & Young	37, 55*
Hewlett-Packard Co.	5, 38*, 43
Hyperion Software	47*
IBM Corp.	33, 35, 45*
Information Builders Inc.	7
LBMS Inc.	41*
Lockheed Martin Corp.	21
Lucent Technologies Inc.	13*, 15*
MCI Communications Corp.	C4, 23*
Microcom Inc.	58*
MKS Compugraphic	57
MS Millennium	71*
National Education Training Group	69
NCD	61
NCR Corp.	38
Nortel North America	69*
Novell Inc.	18
Oracle Corp.	3
Paradigm4	51
Project Management Institute	31
Rational Software Corp.	71
SAP America Inc.	C2*
SAS Institute Inc.	15, 19*
Sequent Computer Systems Inc.	5*
SPSS Inc.	63
Storage Technology Corp.	57*
Sybase Inc.	16*
Tally Systems	6A*
Tektronix Inc.	26*
Tivoli Systems Inc.	10
Transition Software	53
Wiltel	8, 8*
XLConnect	75*

CIO SALES OFFICES

President and Group Publisher
JOSEPH L. LEVY
508 935-4601
Senior VP/Sales
MICHAEL J. MASTERS
973 244-5510

EAST COAST

Regional Director/Advertising Sales
FRANK S. GENOVESE
973 244-5505

District Manager/Advertising Sales
EILEEN P. LOBAUGH
973 244-5507

Advertising Sales Associate
STACY G. GREIMEL
973 244-5519

Advertising Sales Associate
JOAN BONAEDO
973 244-5511

Advertising Sales Associate
ANGELA FUNG
973 227-1140, FAX 973 227-1565

NEW ENGLAND

Regional Manager/Advertising Sales
LEN GANZ
508 935-4039

Advertising Sales Associate
STEPHANIE ROY
508 935-4092, FAX 508 872-0618

SOUTH CENTRAL

Regional Manager/Advertising Sales
ROBERT E. SAWDON

Advertising Sales Associate
SOUNTHALY OUTHAVONG
512 306-9801, FAX 512 306-9805

NORTH CENTRAL

Regional Manager/Advertising Sales
KEITH H. KENNER
847 441-3143

Advertising Sales Associate
ANNE SWARTZ
847 441-5005, FAX 847 441-5150

WEST COAST

Regional Manager/Advertising Sales
RICHARD BASTAS
415 693-1988

Regional Manager/Advertising Sales
JAMES BARRETT
415 693-1995

Advertising Sales Associate
JODY J. NAGY
415 693-1993

Advertising Sales Associate
TIM LEONARD
415 398-8200, FAX 415 398-4649

LIST SERVICES

List Services Manager
STEPHANIE LEGELIS
508 935-4433

List Services Coordinator
KATHRYN A.W. GRAYSON
508 935-4072

List Services Assistant
AMY McCABE
508 935-4151
800 859-5478, FAX 508 872-8506

For further sales information,
visit our Web site at
www.cio.com/marketing/salesoffices.html.



The more insight you have into what others are doing, the better you can plan and implement your own Internet policies

Until now there have been relatively few accounts of Internet policy benchmarks and trends. That's what makes this "best practices" resource invaluable to anyone who must implement a practical Internet policy or enhance one already in place. This report was pre-released and beta tested by CIOs for clarity and completeness. The result is a reference tool that you can implement within days of reviewing. As a value-added bonus, a sample memo and sample policy guidelines have been appended to the report.

Save \$200. As a special offer to *CIO* readers, you are invited to purchase "Maximizing The Internet: Policies, Procedures & Best Practices" for \$395. This is a savings of \$200 off the regular price.

"MAXIMIZING THE INTERNET: POLICIES, PROCEDURES & BEST PRACTICES" EXPLORES...

- What kinds of companies have implemented corporate Internet policies and why? What do such policies cover? How are they enforced?
- Who is responsible for setting and enforcing policy? What are the challenges facing companies that implement Internet policies? How are such policies communicated?
- Who is responsible for designing, developing, and managing corporate Web sites? How are companies currently using their Web sites?
- How does annual revenue and size of company affect Internet policy making and procedures? Are different industries doing different things?
- Is monitoring effective? What sanctions have been imposed for improper use of the Internet?



CIO COMMUNICATIONS, INC.

492 Old Connecticut Path • Framingham, MA 01701
(508)872-0080 • <http://www.cio.com>

An IDG Company

- ☐ I'd like to take advantage of the special reader offer. Please send me the "Maximizing The Internet: Policies, Procedures & Best Practices" study.

Please mail this order form to
CIO Communications, Inc.,
492 Old Connecticut Path,
Framingham, MA 01701 or
fax to (508) 872-0618.

- ☐ Please bill me. P.O.# _____
- ☐ I've enclosed a check for \$395.
- ☐ Please charge my credit card.
- CARD _____
- No. _____
- EXP. DATE _____

Maximizing the Internet: Policies, Procedures & Best Practices

NAME _____

TITLE _____

COMPANY _____

ADDRESS _____

CITY _____

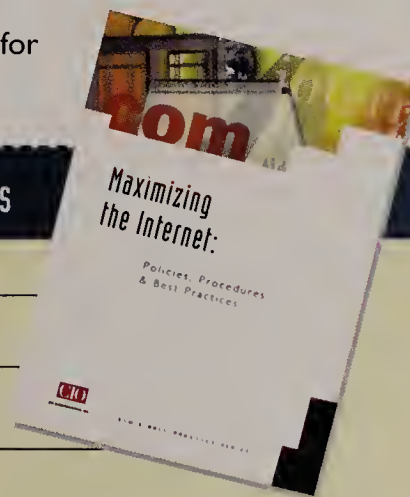
STATE _____

ZIP _____

TELEPHONE No. _____

FAX. No. _____

EMAIL _____



What Is Bandwidth?

IN THE PARLANCE OF COMPUTER JOCKS, “bandwidth” describes the amount of data a network can transport in a certain period of time. In other words, bandwidth is a capacity for rate of transfer, usually expressed in bits per second. Think of it this way: Your corporate network is like a highway. In a given moment, only one car per lane can pass a given point on that highway. During rush hour, bottlenecks cause traffic to slow to a crawl, and you arrive home late for dinner. Too many cars, not enough lanes. It’s the same when your network has too much information flowing between computers and not enough bandwidth. Everything slows down, and in extreme cases, your data may never get to where it’s going.

OK. So what does bandwidth mean for my company?

Every time you communicate with another person or another computer (like the server or mainframe) via your computer, you are moving bits of information over the network. Some activities, such as sending e-mail, create very little traffic. They’re like compact cars, if you will. By comparison, if you send a large document or an engineering diagram, that’s more like driving a tractor-trailer truck through the network because you’re sending lots and lots of bits. The more people using your corporate network, the more congested the network becomes. At first, that may simply slow down the system and force you to sit twiddling your thumbs while your computer retrieves the information you’ve requested. If the overcrowding gets too bad, data may get lost in transit because it crashes into other stuff.

Buzzwords

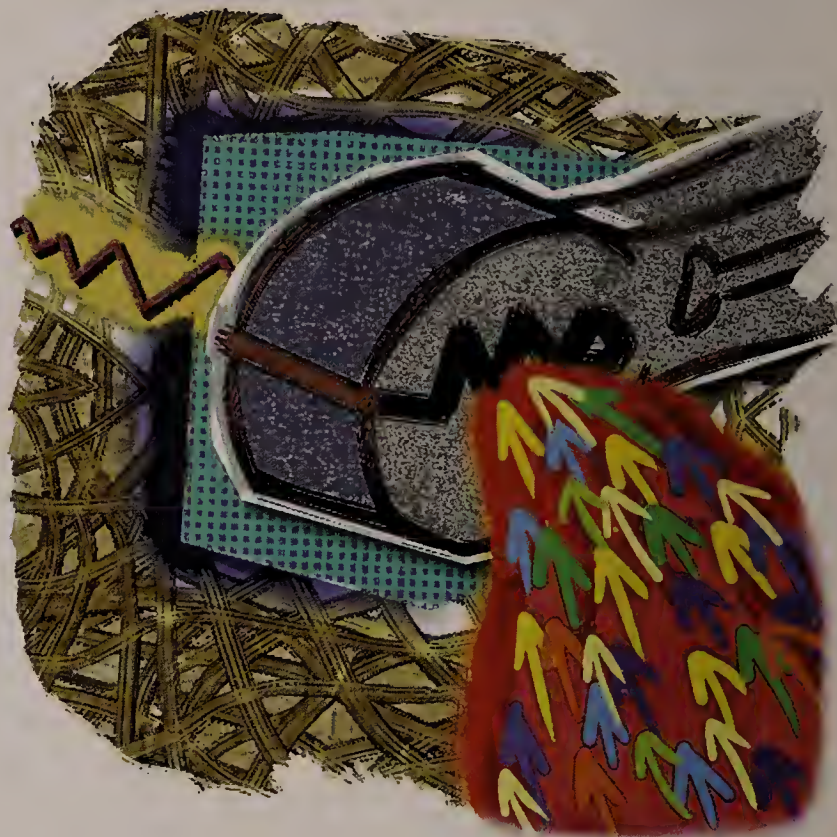
ATM, Frame Relay,

ISDN: These are examples of broadband technologies. If Ethernet is a dirt road, these networks are a paved superhighway. Need we mention that they also cost a lot more than Ethernet?

Broadband: A general term for networks that provide extremely high bandwidth.

Bottleneck: The place on the network (or in a single computer) where the rate of data movement is most constricted.

Collision: My bits and your bits try to use the same part of the network at the same time. Bonk! Many networks, including Ethernet, use collision detection techniques to help ensure your transmission gets through intact.



If our computers are slowing down, does that mean I should buy more network bandwidth? Possibly. Older networks (and even modern modems) tend to move data at slower rates. But buying more bandwidth often means scrapping what’s in place and upgrading to a different kind of network technology altogether. You can’t always pave over the old road to build a bigger one, you have to dig up the old road first.

Many networks today are based on a technology called Ethernet, which has a standard bandwidth of 10Mbps (10 million bits per second); in one second, 10 megabits of data can move through any given spot on the network. And the new Fast Ethernet has transmission speeds of 100Mbps. As technology continues to evolve, even more advanced networks have been developed that offer transmission rates greater than 1Gbps (that’s gigabits, or 1 billion bits, per second).

Of course, the bottleneck that’s hampering your computer’s performance could be located in some area other than the network. The central servers might just be too scrawny, or they might need a faster way to get at the data in central storage. It’ll take some careful analysis to locate the problem. And then, you can’t just throw money at it (music to your ears, no doubt). You’ll have to evaluate what will provide the most bang for your buck.

—Derek Slater

April 26-29, 1998
Hyatt Grand Cypress
Orlando, Florida



The Powerful IT Organization:

Forging Customer, People and Business Partnerships

Our Software Secures More Corporate Data Than All Our Competitors Combined.



More clients — including 462 of the Fortune 500 — trust CA security software than all the partial, proprietary solutions offered by IBM/Tivoli, Platinum and Boole & Babbage.

CA Security Software Is #1.

CA holds more security "firsts" than any other vendor. CA was the first to secure IBM's DB2 platform (two years before IBM). CA was the first to identify and address all the security risks of

UNIX and NT. And with the introduction of ICE (Internet Commerce Enabled™), CA is the first to make it safe to do business on the Internet.

Unicenter TNG Is The Industry Standard For Network And Systems Management.

Unicenter® TNG™ offers the only integrated solution for true end-to-end enterprise management. With support for every major hardware platform and operating system, Unicenter TNG is open, scalable, extensible and 100% vendor-neutral. In addition, Unicenter TNG offers all kinds of powerful and

exciting new features like a real-world, 3-D interface with virtual reality, Business Process Views™ and advanced agent technology.

No other management software offers anything like it.

Single Sign-On lets users use one password and sign on once for every platform.

The Best Feature Of All Is Unicenter TNG Is Shipping Today.

While our competitors are talking about a framework for the "future," Unicenter TNG is a proven software solution that's available today. It's real, it's mission-critical and it's up and running in thousands of sites around the world for some of the smartest clients in the world.

Our clients sleep soundly every night knowing that all their IT assets are safely protected by the best security software in the world. Shouldn't you?

SHIPPING TODAY

**For More Information Call
1-888-864-2368
Or Visit www.cai.com**

COMPUTER ASSOCIATES
Software superior by design.



Unicenter® TNG™

©1997 Computer Associates International, Inc., Islandia, NY 11788-7000. All other product names referenced herein are trademarks of their respective companies.